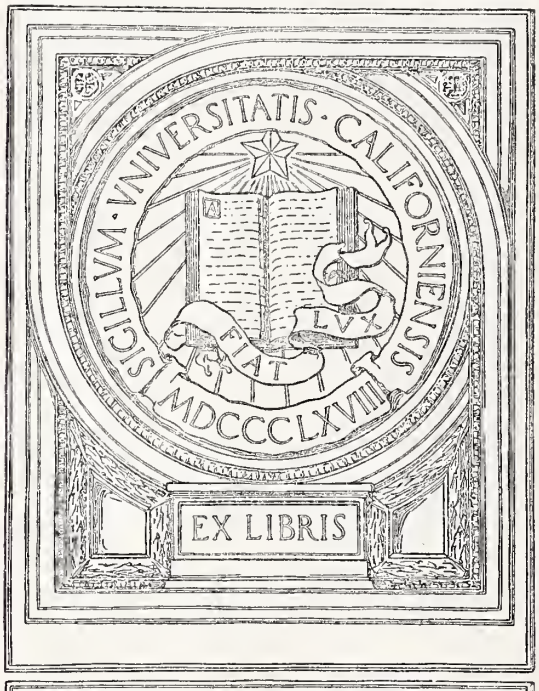
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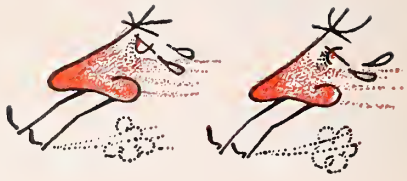
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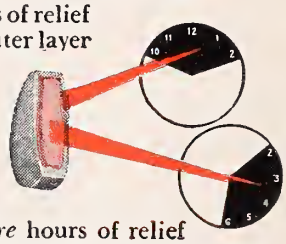
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Original Contributions

The Problem of Glaucoma

Aids in diagnosis and treatment of an ever-increasing disease.

WILFRED J. BUSHARD, M.D.
Minneapolis, Minnesota

GLAUCOMA is a whole complex of diseases of the eye that has elevated intra-ocular pressure as its main feature; and glaucoma leads to eventual blindness when it is not controlled. Frequently, glaucoma is not diagnosed until advanced irreversible blindness has developed in one or both eyes. Therefore, it is evident that early diagnosis is a prerequisite for the prevention of blindness from this cause. A program of glaucoma case-finding is desirable and will be greatly enhanced when all practicing physicians develop a high level of suspicion of glaucoma in their patients.

Historically, blindness from glaucoma has been described from antiquity. The word itself, of Greek derivation, means "bluish-green" and is found in the writings of Hippocrates to describe the color of the pupil associated with blindness. However, the association of raised intra-ocular pressure with the word glaucoma is a much later concept. In the early Christian centuries, Galen and other writers first recognized and differentiated blindness from cataract and blindness from glaucoma, the latter as being quite hopeless. A rather hazy notion regarding glaucoma prevailed into the middle of the 19th century.

A new era in the science of ophthalmology was born when von Helmholtz in 1851[1] discovered the principle of the ophthalmoscope, an instrument that allowed a view of the inner secrets of the eye. Almost simultaneous introduction of impression tonometers by von Graefe, Donders, and others (1863), greatly improved by Schiotz in 1905, later modified to the present tonometers, allowed greater accuracy in diagnosis and follow-up studies of glaucoma. Von Graefe spoke of "amaurosis with excavation of the nerve head;" but it was Donders' privilege in 1862 to present the unifying concept,[2] to add "amaurosis with excavation of the nerve head" as chronic simple glaucoma to the subdivisions of acute, absolute, and secondary glaucoma. The modern conception of glaucoma begins with this era.

Secondary glaucoma is raised intra-ocular pressure complicating some demonstrable pathological lesion in the eye. Absolute glaucoma is an eye quite without hope; it is a blind eye with a fixed pupil, high intra-ocular pressure, edematous cornea, varying intensity of pain, congestion, and phenomena of degeneration. By primary glaucoma we mean a glaucoma for which the ultimate cause is not yet known. Congenital glaucoma, distinct from adult glaucoma, probably has no genetic interrelationship with the adult type.[3]

Classification of Glaucoma

I. Adult Primary Glaucoma
   1. Narrow-angle glaucoma
      a. Acute phase (acute congestive glaucoma)
      b. Chronic phase (chronic congestive glaucoma)
   2. Wide-angle glaucoma
      a. Chronic simple (non-congestive) glaucoma

II. Congenital Glaucoma

III. Secondary Glaucoma
   1. Intra-ocular inflammations
   2. Trauma
   3. Post-surgical (ophthalmic)
   4. Crystalline lens changes
   5. Vascular anomalies
   6. Intra-ocular tumors
   7. Retinal separation
   8. Intra-ocular hemorrhage
   9. Iris degeneration.

IV. Absolute Glaucoma

In the normal eye the aqueous humor is in a constant state of motion under a normal base pressure. The aqueous is formed, probably by dif-

Presented as an inaugural thesis before the Minneapolis Academy of Medicine, December 17, 1956.

fusion and active secretion,[4] in the ciliary processes of the ciliary body, passes through the posterior chamber, through the pupil, into the anterior chamber; from the anterior chamber through the trabeculo-Schlemm canal system, into the aqueous veins,[5] and ultimately mixes with blood[6] in the venous system. The aqueous flow is at approximately two cubic millimeters per minute.[7]

The normal intra-ocular pressure varies within considerable limits but may be taken to range between 20 and 25 millimeters of mercury.[8] A factor in considering the level of intra-ocular pressure is the "diurnal pressure variation;" commonly this involves two to three millimeters of mercury in normal eyes.[9] In a glaucomatous eye this difference may be greatly exceeded or there may be a reversal. In clinical tonometry, the tonometer reading is composed of two variables—intro-ocular pressure and that of ocular rigidity. The degree of resistance by the coats of the eye to the tonometer indentation is the ocular rigidity.[10] Ocular rigidity is increased in the aged, by extreme myopia, and by intra-ocular inflammations. Extreme variations are rare. In a borderline tension, high ocular rigidity may simulate a raised intra-ocular pressure. Fortunately ocular rigidity is not very variable.[11]

The probability that the clinical differentiation of primary glaucoma may be related to the structure of the anterior chamber was suggested by Raeder in 1923, supported by Rosengren's statistical study in 1930, refined by gonioscopic methods and specificially recommended by Barkan in 1938. Further, this differentiation depends on the site of interference with the outflow of aqueous humor. In narrow-angle glaucoma the interference is at the entrance to the trabeculo-Schlemm canal—aqueous-vein system; the narrowness of the chamber angle is a predisposition to angle block and consists of such anatomic factors as smallness of the cornea, continuous growth of the lens throughout life, high hyperopia, and thickness of the iris. Superimposed are physiologic factors that may further block the narrow angle: accommodation, pupillary dilatation, ciliary body congestion, and pupillary block.

Precipitating factors preceding an acute episode may be nervous shock, dilation of the pupil during dark adaptation, medication for mydriasis, surgical shock, and menstruation. These precipitating factors tend to implicate a neurovascular disturbance based on systemic vascular instability with a resultant vasodilatation, increased capillary permeability and edema. This also suggests reflex control with sympathetic-parasympathetic imbalance under the influence of central stimuli which may be of physical and/or psychosomatic origin.[12]

The clinical manifestation of narrow-angle glaucoma may begin with an acute rise in intra-ocular pressure and varying symptoms dependent on the degree and duration of increased pressure. The symptoms are an expression of corneal edema with the subjective equivalent of blurring of vision, halos around lights, and ocular pain. Mild intermittent attacks subside spontaneously with relief of symptoms and return to a normal base intra-ocular pressure. After repeated attacks secondary changes in the chamber angle (peripheral synechia) further embarrass the drainage angle.[13] Subsequent attacks may become more intense with a rise in the base intra-ocular pressure producing a chronic congestive glaucoma. Congestive glaucoma of some duration may then manifest visual field and visible nerve head changes. However, a more violent and prolonged rise of intra-ocular pressure will present the dramatic classical picture of acute congestive glaucoma with marked temporary loss of vision, pupillary dilatation, steamy cornea, intense pain, shock, nausea and occasional vomiting. The general state of such an acutely ill patient may be confusing, particularly if the pain is localized in the temples or the base of the skull, not in the eyes. Prompt and proper treatment of such cases usually brings gratifying recovery of vision.

In wide-angle (chronic, simple) glaucoma the anterior chamber is usually of normal depth; or, if shallow, it has an open angle as can be demonstrated with a gonioscope. The site of interference with aqueous outflow is placed not at the entrance to, but somewhere in, the trabeculo-Schlemm canal —aqueous-vein system, in the nature of degeneration and sclerosis. An abnormal resistance to aqueous outflow in glaucomatous, as compared with normal, eyes has been demonstrated and can be determined by tonography[14]—a method of applying an electro-tonometer to an eye for a given time while recording the rate of drop of ocular tension.

The manifestation of the more prevalent and difficult wide-angle glaucoma is practically asymptomatic except for insidious progressive loss of vision. There are no sudden changes of intra-ocular pressure; the diurnal pressure variations become greater; the intra-ocular physiologic processes

such as accommodation suffer; and degeneration of intra-ocular nerve elements proceeds. Such a patient may be completely unaware of his disease; or he may note mild vague symptoms of visual fatigue, mild headache, poor dark adaptation, fleeting halos, and need for stronger reading glasses. The pattern of intra-ocular degeneration of wide-angle glaucoma is not always consistent with the level of the intra-ocular pressure. It is postulated that a vasoconstrictive factor may affect, primarily, the posterior segment of the globe in some instances, thereby causing more rapid field loss due to optic nerve degeneration at the disc. Obviously, damage to the nerve elements prevents recovery of field loss by treatment.

Though this concept of narrow-angle, wide-angle glaucoma has real clinical significance, it does not preclude several pathogenetic factors (neurovascular as well as mechanical). What role neurovascular influences have in the genesis of glaucoma is obscure. Truly, the etiology and pathogenesis of this baffling and complex problem is not yet known. Nevertheless, from those facts known, the clinician can approach the problem of glaucoma with confidence and hold out a relatively good prognosis to most of his patients provided an early diagnosis is followed by meticulous management.

Clinical Diagnosis

The clinical diagnosis of primary glaucoma involves two distinct types of symptomatology. The patient with a red painful eye of acute narrow-angle (congestive) glaucoma seeks immediate relief from his acute dilemma. The physician must differentiate acute glaucoma from acute iritis, with or without secondary glaucoma, and acute conjunctivitis before treatment. A history, visual acuity inspection, palpation, tonometry, and biomicroscopy are aids to a differential diagnosis of these ocular diseases. Diagnosis of narrow-angle glaucoma is a problem while in the interval phase; here no redness, pain or blur is present. A careful history may indicate previous episodes of blur, halos, and intermittent ocular pain. Inspection, microscopy, gonioscopy, tonometry, and a provocative test are diagnostic methods that apply. Since the intra-ocular pressure between attacks may be at a normal level, a Dark Room Test may provoke a rise of pressure. A rise of 8 millimeters of mercury or more after an hour's stay in a dark room or with light tight bandages over the eyes without permitting the patient to sleep is considered a positive test. Angle block produced by dark adaptation mydriasis is the mode of action. A negative result in a patient with a definite narrow angle calls for re-examination at least in six months.[11] This is based on the fact that a considerable number of patients with an anatomically narrow angle eventually develop acute glaucoma.

For early recognition of wide-angle glaucoma, we depend a great deal on tonometric evidence of elevated intra-ocular pressure. Although the diagnosis of glaucoma does not depend solely on tonometric measurements, an elevated intra-ocular pressure is a cardinal sign. A positive water-drinking provocative test is of help. In the fasting state a preliminary tonometer reading is made. The patient then drinks one liter of water followed by tonometry at fifteen-minute intervals. A rise of 6 or more millimeters of mercury is considered a positive response. The mode of action for this test is the resistance to outflow of aqueous. A negative test does not exclude the possibility of wide-angle glaucoma. Elevated intra-ocular pressure associated with perimetric evidence of visual field damage completes the diagnosis. Ophthalmoscopic evidence of optic nerve changes may or may not be readily apparent at this stage.

Whereas the visual fields are of no value in the diagnosis of early narrow-angle glaucoma, the opposite is true in wide-angle glaucoma. Careful mapping of the field of vision on a tangent screen at a distance of 1 meter from the patient using 1 millimeter and 2 millimeter test objects, is a means of early diagnosis, and a means of follow-up. The early signs of field-loss are in the nasal periphery and about the blind spot—an expression of nerve fiber bundle defects. Advanced field loss may be demonstrated many times without loss of central visual acuity so that a vision test is of no value for early diagnosis of chronic simple glaucoma.

Treatment

The treatment of glaucoma is both medical and surgical. Since the pathogenesis of glaucoma is not yet fully understood, there is no specific but only symptomatic therapy. The aim of all methods is the relief of increased intra-ocular pressure. Although local therapy is of prime importance, one must not lose sight of the patient's general well-being. I believe it safe to say that each case of glaucoma must be evaluated on its own merits. The type of primary glaucoma, the intensity and

stage of progression, the age of the patient, and the patient's general health will govern the form of therapy selected.

In general, narrow-angle glaucoma is now considered a surgical problem; though medical means, when possible, are used to abort an acute attack prior to surgery and as a means of maintenance in the aged and infirm.[15] Wide-angle glaucoma is considered primarily a medical problem.[16] That means medical therapy is continued as long as the disease is satisfactorily controlled. This may involve the use of miotic drops many times each day for the remainder of the patient's life. Or when a "normative" pressure, that is, "an intra-ocular pressure level consistent with no further field loss," cannot be attained or is lost, some operative procedure (usually a filtering operation) may have to be performed—a rather hazardous undertaking with a recognized high degree of inconsistency of results for any wide-angle glaucoma surgery, independent of the operator's technique. Not a few of these eyes respond poorly to surgical as well as medical therapy, perhaps due to hydro-dynamic imbalance and intra-ocular metabolic derangement. An expression of this is the frequent complication of cataract formation and other intra-ocular degenerative phenomena.

The treatment of wide-angle glaucoma includes proper orientation of the patient. The nature of the disease should be explained. As an adjunct to local therapy it is wise to request a complete physical and psychiatric appraisal of the patient in order to properly evaluate the future management of the individual with this disease.

The incidence of primary glaucoma is not definitely known, but several estimates have been made. The National Society for the Prevention of Blindness; through sample surveys in various parts of the United States, has estimated the known blind as separate from primary glaucoma. Based on case records indicating ophthalmological diagnoses of causes of blindness in many thousands of recipients of welfare aid in the areas surveyed, it is estimated that 44,000 persons[17] are blind from primary glaucoma. This represents approximately 13 per cent of the total blind population in the United States. Because of incomplete information in these case records, one cannot draw conclusions as to the ratio of acute congestive to chronic simple glaucoma. As a matter of fact, very few reports of comparative figures are in the literature. An analysis of all primary glaucoma seen at the Illinois Eye and Ear Infirmary from 1939 through 1941 reveals 41 per cent caused by chronic simple glaucoma and 14.5 per cent by acute primary glaucoma; while at the Detroit Receiving Hospital consecutive case records from 1947 through 1949 reveal 72 per cent caused by chronic, simple and 6 per cent by acute, primary glaucoma as reported by Saul Sugar in his book "The Glaucomas."[18] It is obvious that chronic simple glaucoma is much more common; the ratio in one instance is 3:1, and the other is 12:1.

An estimated 1,000,000 persons or 2 per cent of the population of forty years of age and over have chronic simple glaucoma. This information is obtained primarily through the six-year survey reported by Brav and Kirber[19] of 10,000 Philadelphia industrial employes, aged forty to sixty-five years, with a 1.53 per cent proven incidence; and the one-day Cleveland survey of 12,803 persons reported by Wolpaw and Sherman[20] with 240 proven cases of primary glaucoma. In each series, many additional persons were discovered where a presumptive diagnosis had been made at the time of the reports. For comparison, a Minnesota mass-screening for diabetes revealed something abnormal in 2 per cent of urine samples and not all were diabetic patients. Further, the Minnesota chest x-ray survey for tuberculosis revealed 3 to 4 per cent abnormals with 0.5 per cent[21] suggesting tuberculosis in those persons studied.

The influence of heredity in primary glaucoma is recognized. Investigations show a higher incidence of glaucoma in relatives of primary glaucoma patients than in the general population. For instance, Biro reported 5.6 per cent of 761 patients, Posner and Schlossman[22] 13.7 per cent of 373 patients, and Probert[23] 17.8 per cent of 571 patients with primary glaucoma had a hereditary factor. The importance of a careful family history in glaucoma case-finding is evident.[24]

Summary

1. The classification of primary glaucoma used today is based largely on the results of gonioscopic studies, recently confirmed by tonographic investigations. As a result of this better understanding of the mechanism of glaucoma, a more effective approach to therapy is possible.

2. The diagnosis of early primary glaucoma is often difficult. A person with elevated tension needs careful ophthalmic studies, sometimes over a

period of months before an unequivocal diagnosis of glaucoma can be made or excluded.

3. Several sample surveys indicate a great reservoir of undiagnosed primary glaucoma in persons forty years old and older.

4. Primary glaucoma becomes a more serious problem each year as medical science stretches man's life span, since this disease strikes in the older age groups.

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SERENDIPITY BRINGS PROGRESS

Serendipity has been responsible for many of the world's most precious scientific discoveries. Serendipity, the dictionary tells us, is a gift of finding valuable things not sought for. Medical men like to describe it as a happy accident.

Edward Jenner had this gift. When he was nineteen, he was told by a milkmaid that she would never get smallpox because she had had cowpox. Later, when Jenner became a physician and saw the futility of trying to treat the disease, he remembered the girl's words. He investigated other milkmaids and found in almost every instance that none of them had ever had smallpox. The idea of inoculating people with cowpox was born, and Jenner is credited with saving millions of people from horrible death or disfigurement.

Another case of serendipity occurred one day in 1895. Wilhelm Konrad Roentgen was in his physics laboratory studying the phenomena of electrical discharge in the high vacuum of a glass tube. Suddenly he discovered an extraordinary thing. A black line was appearing on a piece of barium-platino-cyanide paper separated from the tube by a shield of black cardboard. He investigated and found that the line was produced by rays capable of penetrating cardboard. He found also that they were capable of penetrating other material and even flesh. These, of course, became known as x-rays, one of medicine's most useful diagnostic and therapeutic agents.

The Female Urethra

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"BLADDER TROUBLE" is an extremely common complaint in females of any age. However, this so-called "bladder trouble," in most instances, has its primary source in the urethra, manifesting itself either as an acute or chronic type urethritis, or one of the other entities peculiar to the female urethra. The annoying and aggravating symptoms and occasionally marked disability produced by disease of the female urethra is usually in sharp contrast to the degree of pathology found on examination, particularly in chronic urethritis. Urethral disease in women and girls is often overlooked or disregarded because of persistent normal findings in the urine. At the time of examination of the patient and of the urine, without a urethroscopy, the findings noted by the clinician are in many instances so minimal, that many of these patients are unjustly termed functional. Lesions of the urethra should always be considered as a source of abdominal pain or discomfort in women. According to Kicklighter and Simmons,[6] the urethra is partially or fully responsible for 75 per cent of urinary disturbances in women.

Anatomy

The anatomical structure of the urethra, and the location of the urethra, are the two basic reasons why this segment of the urinary tract is so frequently involved. The female urethra is a short muscular tube 2.5 to 4 centimeters in length and 8 millimeters in diameter, increasing slightly in the proximal third. In the normal individual, it will accommodate a No. 28 French sound with ease. The normal lumen is not rigid, nor does it stand open, it is only potential. Cross section of the urethral lumen shows an inner epithelial layer and an outer smooth muscular layer with an inner longitudinal and outer circular coat. The connective tissue layer between the epithelial and muscular layer contains the vascular and lymphatic structures. The anterior and posterior portions are divided by an ill-defined, but extremely powerful sphincteric mechanism within the urogenital diaphragm. The distal two-thirds of the urethra is lined with squamous epithelium and is continuous with the introitus. The proximal third of the urethral lumen is lined with transitional cell epithelium and is continuous with the epithelium of the urinary bladder. The canal, in the relaxed state, presents a pleated appearance formed by longitudinal ridges of mucosa. The urethra itself is 10 to 12 millimeters in thickness and its inner lumen circumference is studded with numerous paraurethral glands. Just within the meatus are the Skene's glands lying within the muscular coat, with ducts opening generally in the distal third of the urethra and occasionally at the external urethral meatus. Paraurethral glands are usually not found in the proximal third of the urethra. Glands have been described within the urethra resembling the prostate microscopically. These have usually been found in the posterior lateral walls of the urethra, and occasionally surround the entire urethral lumen. The glands have been regarded as homologues of the prostate of the male, but this has been limited by some investigators to those glands occurring only in the posterior half of the urethra. The glands may occasionally undergo hyperplasia giving rise to the so-called "female prostate," and many have been found to contain concretions. Lymphatic drainage of the female urethra is to the deep inguinal, external iliac, and hypogastric nodes and is similar in arrangement to the lymphatics found in the posterior urethra of the male. Arterial supply is from branches of the inferior vesical and internal pudendal arteries with the veins draining to the pudendal and vaginal plexes. An especially rich nerve supply is present from the hypogastric sympathetic plexus and the sacro-pudendal plexes. The sole function of the urethra is the conveyance of urine from the urinary bladder to the outside. The female urethra, in its entirety, corresponds to the posterior urethra of the male. The structure, innervation and blood supply of the urethral

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wall, and the adaptability to the function of micturition are practically identical in the two sexes. The female urethra is in close proximity to the organs of the generative tract and is extremely susceptible to trauma and also to inflammation, from continual bathing by secretions arising from the vaginal mucosa and the uterine cervix. The urethral meatus is poorly protected from generative tract secretions and also from contamination of the rectum, for it is practically wide open, or extremely patulous, and lacking protection from the labia. The female urethra, from the diaper stage of life to old age, offers easy access to organisms present in the region to gain entrance to the bladder and then to the upper urinary tracts.

Classification

There are many different methods that have been used to classify diseases of the female urethra: (1) acute inflammations, (2) chronic inflammations, (3) stricture of the urethra, (4) urethral caruncles, (5) prolapse of the urethra, (6) urethral diverticulum, (7) urethrocele, (8) foreign body of the urethra, (9) urethral injury, (10) congenital diseases of the urethra, (11) venereal diseases, (12) carcinoma of the urethra. This probably is the most complete classification, but it can be condensed to anomalies, infections, tumors, and injuries, as with other organs.

Urethritis, in general, may be classified according to age:

1. Urethritis in infancy and childhood is classified on the basis of anomalies of the urethra, specific or non-specific vaginitis, soiled diapers and poor perineal hygiene.

2. Urethritis in the child-bearing period is most common and includes a large number of the patients seen by the urologist. Ascending urethritis, occurring just before, during, or shortly after the menstrual period is seen frequently because of the change in the vascular supply of the pelvis at this time, with less resistance to infection, as well as the continual bathing of the urethral meatus in the menstrual flow which affords an excellent culture media for any organisms present. The trauma and secretions of pregnancy, labor and delivery, definitely play a part in producing a urethritis. The patient with so-called "honeymoon cystitis," undoubtedly has symptoms from the trauma which occurs during intercourse followed by a secondary infection. In addition, there is lymphatic communication between the cervix and base of the urinary bladder offering a further route for entrance of infection to this area. Urethritis occurring in the post-partum period and post-operative phase of hospitalization often results from trauma by catheterization, or by placement of an indwelling catheter, with trauma to a latent urethral focus of infection or direct introduction of infection.

3. The menopausal female with the usual changes of epithelium in the generative organs and other organs of the pelvis, is particularly susceptible to urethritis.

4. A post-menopausal patient, with senile vaginitis and poor tissue resistance, is also a potential candidate for urethral disease.

Acute and chronic urethritis at any age may be associated with cystitis, trigonitis, occasionally upper urinary tract infection, or an extra-urinary infection.

Diagnosis

The usual office work-up for the patient with symptoms of disease of the female urethra should begin with an adequate history, not only of the urinary system, but of the general systems as well. In addition to pain in the suprapubic region, lower back, lower abdominal quadrants and thighs, the urethra may be suspected as a source of other common symptoms: frequency, urgency, dysuria, incontinence, straining, discharge, voiding with effort and sensation of incomplete emptying. In the male with these symptoms one would immediately look to the urethra as the source of trouble. The same applies to women. Folsom and Alexander[4] state that "any pain within two feet of the female urethra which does not seem to be adequately accounted for by some definite pathology, should be suspected of being due to the urethra."

Physical examination should not be limited only to the urethral area, but should include a complete examination. Examination of the urethra through the anterior vaginal wall should be done whenever a vaginal examination is carried out, and not just in suspected urethral disease. The normal urethra feels much like a semi-rigid tube, one centimeter in diameter, along the central portion of the anterior vaginal wall originating at the base of the bladder outlet and terminating in a vertical slit-like meatus five millimeters in diameter about two centimeters below the clitoris and above

the external vagina. One may be impressed that the normal urethra is thickened until some experience is gained.

Particular attention should be given to the external urethral meatus. With the examining finger in the vagina and then stripping the length of the urethra, one should search for and note secretions at the meatus. Occasionally one may see the orifices of dilated ducts at the external urethral meatus from the glands of Skene which may show an egress of purulent material upon expression of the urethra. A microscopic study of the secretion, including Gram and methylene blue stains, and culture of the material with sensitivity studies should be done. Vaginal examination by speculum and digit and with microscopic and cultural studies of the vaginal secretions is mandatory. Rectal examination and bimanual examination should be included. A catheterized urine specimen should be obtained with a well-lubricated catheter, and this too should be subjected to complete study. At one of the visits, measurement of the residual urine should be made, and this specimen should also be thoroughly appraised. An excretory urographic series may show chronic changes from asymptomatic ascent to kidney or ureter, from previous lower urinary tract disease, but most often it will be normal. Anomalous kidneys and ureters, particularly with duplication, may indicate, or lead one to suspect, emptying of one of the anomalous ureters into the urethra itself. Suspicion of this abnormality should be high in the incontinent female child. The most important phase in the study of the female urethra is urethroscopy with a cystoscopic examination as well. Much can be accomplished without it, but eventually it must be done. The urethroscope reveals a positive diagnosis, for in many cases the microscopic examination of the urinary sediment is negative.

Acute Inflammation of the Urethra

The etiology may be one or several sources. Acute Neisserian infection in former years was a common source, however, in this section of the country the incidence of venereal disease is very low. Trauma of a catheter, douche tip, or of intercourse may produce an acute inflammatory reaction. Chemical inflammation, secondary to instillation of various medications, must be considered. Dietary indiscretions with large amounts of caffeine, alcohol-containing beverages, heavy use of condiments, and certain fruits, particularly tomatoes, may produce an acute reaction. The mucosal surfaces of the urethra are not unlike other organs which manifest themselves as shock organs to certain allergenic substances. Post-instrumentation inflammation of the urethra is common, particularly in the post-partum or post-operative periods, when the patient has been catheterized for an acute urinary retention. The exploring, investigative, erotic male or female, may place a bobby pin, glass rod, or other foreign body in the urethra. Interstitial type inflammatory reaction of the urethra may occur in the patient with a latent focus of infection in a paraurethral gland which may come out of a dormant state spontaneously. The genital origin of acute inflammation seen from the trauma of intercourse, and/or from the secretions of the generative tract containing bacteria, or the flagellate Trichomonas vaginalis, is most common. Poor personal hygiene and improper cleansing maneuvers after bowel movements, or micturition, easily produce an acute infection.

Symptoms are those of vesical irritability with marked frequency, dysuria, nocturia, urgency, and sensation of relief, usually after voiding. Symptoms are not constant in all patients, and the course may be from one to several days with relief at varying intervals. It must be remembered that "pain from the urethra may be distributed to any area within two feet of the urethra itself."[4] Many of these patients are extremely nervous and some suffer more from the nervousness than from the vesical neck irritability itself. The nervous reaction is usually related to the severity of the symptoms. The findings on vaginal examination may reveal a tender, slightly thickened urethra, with tenderness at the urethral-vesical juncture. If the disease is due to a Neisserian or a Trichomonas infection, these organisms will be found on study of the urethral or vaginal secretions, and sometimes in the urine. The urine itself may be completely negative, and at the time of urethroscopic study a generalized hyperemia and edema of the mucosa of the urethral lumen will be found.

Treatment is simple, and if the etiology is specific, medication for the organisms found on the culture and sensitivity study can be used together with forcing fluids, hot sitz baths, warm saline douches, a bland diet with no caffeine or alcoholic beverages, and no sexual activity. If the

etiology of acute inflammation of the urethra is from some source other than infection, eradication of the factor, together with the above described regimen will usually suffice. Treatment should be too long rather than too short, in order to avoid recurrence. Cervico-vaginal foci must be eliminated, and perineal cleanliness stressed.

Chronic Inflammation of the Urethra

Chronic inflammation of the female urethra is usually seen in middle life and may have an obscure cause, but usually there is history of a prior acute episode. This type urethritis is the source of most annoying and occasionally totally disabling symptoms. The etiological factors producing the acute episode are those just mentioned which are not completely eradicated with subsequent tissue changes in the urethra producing the chronic phase. It is frequently due to secondary changes from a chronic cervicitis or vaginitis, specific or non-specific. Mucosal changes of hyperplasia of a granular or "cobblestone" appearance are seen together with fibrosis of the mucosa and submucosa. The paraurethral glands are infected. The hyperplasia of the mucosa may be so marked that the lumen will be almost completely occluded. The symptoms and treatment are essentially the same as the acute stage. In addition, to eliminate the granular hyperplasia and to stretch the fibrosed urethra and establish drainage from the paraurethral ducts and glands, the patient will benefit by weekly, gentle, serial urethral dilatations, massage of the urethra over an inlying sound, and instillation of ⅛ per cent silver nitrate, or 0.6 per cent Furacin with the use of Furacin urethral suppositories (containing 2 per cent diperodon hydrochloride, an anesthetic agent). Ten per cent silver nitrate, applied under vision, through a urethroscope, may be necessary, or in the stubborn case, electro-fulguration may be required. Cervicovaginal foci must be eliminated, and perineal cleanliness stressed.

Stricture of the Female Urethra

Stricture of the female urethra may be either congenital or acquired. Congenital strictures of the female urethra, contrary to the general impression, are quite common and are found at the external urethral meatus consisting of a circular band of resistant tissue, probably originating from fetal remnants of the cloacal membrane. The stricture may be traumatic in origin, or a sequelae of chronic urethritis with periurethral fibrosis and contracture of the urethra. Obstruction may be only partial, but it may occasionally be almost complete and represent a definite etiological factor in many infections of the female urinary tract because of poor drainage of the urinary output. A collection of residual urine with subsequent bladder damage follows. Symptoms are those of an acute urethritis, accompanied by straining during micturition with a sensation of incomplete emptying in the long established stricture. Treatment is meatotomy and follow-up serial dilatations to prevent recurrence, together with the regimen for acute and chronic phases of urethritis.

Urethral Polyps

Urethral polyps, pedunculated, or the sessile "tab-like" polyps are very common in the female with long standing chronic urethritis and may form in any part of the canal, but are especially frequent in the proximal third of the urethra and at the bladder neck. They vary in size from a thin, villus thread with a central vascular supply to 4 to 5 millimeters in diameter. Some have multiple villus fronds resembling a papilloma. A polyp may reach such size that it may extrude from the external urethral meatus. A history of long standing cystitis and urethritis is usually noted. The symptoms are those of vesical neck irritability, and occasionally the patient may note a sensation of continual pressure in the area of the urethra as well as a feeling of incomplete voiding. Pyuria and microscopic hematuria are fairly frequent, but in many instances a completely negative urinalysis will be found. The diagnosis is made by urethroscopic study. Treatment of the patient with urethral polyps is the regimen for chronic urethritis with specific medication for the organisms found on culture and sensitivity studies. In many patients light fulguration or transurethral resection of the polyps may be required, with follow-up urethral dilatation and instillation. In the menopausal and post-menopausal patient, the use of estrogenic vaginal cream has proven to be of benefit, particularly in the prevention of recurrence.

Urethral Caruncle

A urethral caruncle is a friable, sensitive, vascular tumor, usually seen in the middle-aged or elderly female. The tumor is usually on a pedicle, freely movable, and bleeds very easily to touch.

Caruncles are large or small, the small caruncles being extremely common and usually seen daily in the practice of the general practitioner and gynecologist. It is the best known and least understood lesion of the female urethra. The etiology is obscure, but it is probably a hyperplastic response to infection and frequently associated with chronic cystitis, granular urethritis, and chronic cervico-vaginitis. It is very commonly seen with chronic Trichomonas vaginitis. The true caruncle is a vascular, raspberry-like tumor, 1 to 10 millimeters in diameter or larger, found at the posterior lip of the urethral meatus. It is not a true neoplasm, nor is it a pre-cancerous lesion. However, these lesions may co-exist and every caruncle should be examined histologically to exclude the possibility of carcinoma. A typical caruncle is most often of angiomatous character and without glandular elements.

The patient may have no complaints, or symptoms may vary from slight pain during micturition and coition, to severe pain during urination with frequency, and occasional bleeding usually noted on the post-voiding tissue. Diagnosis is made on inspection and confirmed by histological examination of the removed tissue. Treatment is removal of the caruncle by sharp dissection, or with a loop electrode, with follow-up serial dilatations of the urethra and the use of estrogen vaginal suppositories or estrogen cream. As in all urethral disease, cervico-vaginal foci must be eliminated and perineal hygiene stressed.

Prolapse of the Urethra

Prolapse of the female urethral mucosa may be partial, or involve the complete circumference of the external urethral meatus. It is characterized by an eversion or rolling out of the urethral mucosa through the external urethral meatus forming a rosette of tissue at the external meatus. Size of the mass depends on the extent of the prolapse, and not infrequently one sees minor phases of redundancy with only partial protrusion as the first stage of development of extensive prolapse. In many instances of limited eversion or redundancy with proliferative change, the lesion may be mistaken for a caruncle. The mass may be so large that the external urethral meatus may be completely obliterated by a large, red, pulpy, mass, and it may be impossible to catheterize the bladder. Prolapse may follow removal of a caruncle, but usually relaxation of the meatus in the aged or an unknown factor is the cause. The frequent occurrence in children suggests a weakness of the adherent structure of the urethral mucosa to the connective tissue layer permitting downward and outward extrusion with the propulsive force of each voiding. Urethral prolapse in children should not be confused with a prolapsed ureterocele. Complaint of a painful, protruding mass, bleeding, producing difficult urination, and occasionally acute urinary retention may be described. The diagnosis is made on inspection and finally by examination of the tissue removed microscopically. There are several different methods of treatment, but the most successful is circular excision, or circumcision, of the prolapsed mass, followed by serial dilatations. Cauterization has been successful in many instances by the stellate coagulation method using deep radial strokes in the various quadrants of the protruding mass.

Diverticulum of the Female Urethra

Diverticulum of the female urethra has become a more common urological disorder because of the awareness of the condition. Physicians who search for diverticuli will find them. It is not common. Urethral diverticula may be confused with lesions of Skene's glands, or paraurethral cyst or abscess, and a differential should be made. The origin is not clear, but perhaps a minute herniation occurs through the mucosa of the urethral lumen at a point weakened by trauma, or by rupture into the urethral canal by a paraurethral abscess or a retention cyst. This progresses in size with the constant force exerted by the urinary stream. Diverticula have been found in the fetus, infant, and young virgins, all with no history of urinary infection. These may be congenital type diverticula, secondary to occlusion of a paraurethral duct with the accompanying gland continually capable of secretion, or from faulty union of primitive urethral folds, or from Wolffian duct remnants. Diverticula more commonly result from injury to the urethral mucosa due to mechanical trauma, cystoscopy, the passage of calculi, or prolonged infection. Diverticula usually become infected and form chronic indurated abscess masses, in turn, producing urethral and vesical infection. Many have been found containing calculi and some have become completely cut off from the urethral lumen forming a cystic structure.

The patient usually complains of frequency,

burning, dysuria, dyspareunia, occasionally gross hematuria, and occasionally, hesitation in the urinary stream. One patient voided easily and felt she emptied her bladder, but she could always express a few cubic centimeters of urine, usually cloudy, upon placement of a finger in the vagina and massaging the anterior vaginal wall. The diagnosis is made by finding a midline pouch in the mid-third of the urethral-vaginal wall which appears as a fluctuant mass. The examiner can express pus and urine on stripping the urethra followed by disappearance of the mass. Confirmatory evidence is obtained by urethroscopy, and, in some instances, the orifice can be visualized and catheterized. A urethrogram may be made with a double-bulbed catheter, with one bulb in the bladder and the other flush up against the external urethral meatus, and visualizing the diverticulum with injected radiopaque media. The treatment for permanent cure, requires excision. However, small diverticula have become asymptomatic and disappeared by massage of the urethra over an indwelling urethral sound, coupled with chemo- and antibiotic therapy, sitz baths, cleansing douches, and abstinence from sexual activity.

Urethrocele

Urethrocele is usually termed as a wide-mouthed diverticulum or pouch that communicates widely with the urethra, wheras true diverticuli usually communicate with the urethra by a narrow or tubular opening. Urethrocele is usually the result of trauma incident to pregnancy and delivery, and is accompanied by generalized relaxation of the pelvic floor with formation of a cystocele and rectocele. The symptoms are those of stress incontinence, unless the area of the urethrocele has become infected, and then symptoms of vesical irritability are present in addition. The diagnosis is made by vaginal examination with the finding of a pouch-like deformity of the anterior vaginal wall in the region of the posterior half of the urethra. This is further confirmed by urethroscopic study at which time the wide-mouthed pouch is visualized. It may present itself as a true pouch, or merely as a relaxed floor of the urethra in the region of the pouch formation. Treatment is repair of the cystocele and rectocele with resection of the pouch, if large, otherwise the use of the so-called "Kelly stitch" with plication of the urethra and vesical neck may prove to be the only form of surgical treatment necessary.

Injuries

Injuries of the female urethra, apart from those acquired at childbirth, are extremely rare, because of the location of this structure beneath the pubic arch. Straddle injuries, and rupture, or puncture of the urethra by fragments of fractured pelvic bones are occasionally reported, but are infrequent in comparison to the incidence found in the male. The canal itself is short, straight, and instrumental injury is unusual. The urethra may be injured during coition, and surgical injuries with formation of fistulae are occasionally seen. Insertion of foreign bodies may produce mucosal tears or complete penetration of the wall of the urethra. The accidents of labor, with severe and prolonged pressure, may produce contusions or tears in the muscle fibers and mucosa. During delivery, the urethra itself may be torn and occasionally completely avulsed with the use of obstetrical forceps. Treatment of severe injury to the urethra must first be attended by diversion of the urinary stream by a supra-public cystostomy. Usually the contusion or tears of the mucosa will heal with placement of a splinting, indwelling catheter for several days, plus generous use of chemo- and antibiotic therapy. Follow-up urethral dilatations are a must.

Venereal Disease

Gonorrhea in the female is predominently a gynecological problem. However, the urethra is frequently involved, either primarily or, most often, secondarily from the genital tract. The disease is transmitted by sexual intercourse, but may be contracted by contact with infected fingers, linen, and other articles, especially in female children. In adult females, the cervix is most frequently the site of the primary infection, the urethra next, and the Bartholin's and Skene's glands follow. The urethra is usually infected secondarily from the bacteria in the vaginal discharge. The entire urethra, as well as the trigone, is likely to be involved, and a gonorrheal-type cystitis does occur. Chronic infections these days are relatively uncommon because of the effective use of antibiotics and other chemo-therapy. In female children, Neisserian urethritis and cervicitis are infrequent, and the infection is usually confined to the vagina and vulva.

Symptoms of urethro-vesical gonorrhea are those of vesical irritability with urethral discharge and occasionally hematuria. In children, the initial complaints usually are itching and burning

about the genitals from a purulent discharge. The labia are usually swollen and may be stuck together by the discharge which is formed. Diagnosis is made by the microscopic study of urethral and vaginal smears of the discharge after suitable staining. Treatment with massive doses of penicillin and sulfonamides, controls the infection and follow-up urethral dilatation will prevent the complication of urethral stricture. A Wassermann should be done as soon as the diagnosis is made, before penicillin is used, and the patient must be cautioned that frequent serologic tests for syphilis should be carried out for several months following the original infection to be certain that a primary lesion has not been masked by the use of the antibiotic. Vaginal suppositories containing estrogenic substance are advised in children in addition to chemo-and antibiotic therapy.

Chancre of the female urethra is of less frequent occurrence than in the male, and it is most likely found at the meatus or in the anterior portion of the vaginal canal. Gummatous ulcers of the vulva may undermine and destroy the urethra, but these are practically unheard of today.

Trichomonas Urethritis

Trichomonas vaginalis is a common offender today and may be classified by some as a venereal disease. Minute red dots are seen around the external urethral meatus and in the vestibule in the early stage, but most often a chronic odoriferous white discharge appears from the urethra. Urethral infection from this organism originates from cervico-vaginal foci which originally came from the rectum, and a cycle of re-infection by the male partner is to be expected.

The chief symptoms are local itching and burning, and a profuse frothy vaginal and urethral discharge. Palpation of the urethra reveals tenderness and thickening, and the patient complains of severe urgency, frequency, and burning on urination. The cystoscopic picture is not pathognomonic, however, with invasion of the urinary bladder, the mucosa has a fluffy, granular appearance and may show bullous edema. The so-called "strawberry" trigone, in which the mucosa has a rough appearance, with numerous, small, circumscribed hemorrhages may be seen. Flagellates are easily detected when present, and a definite diagnosis can be made only after the organism is seen. Treatment of the cervico-vaginal foci is directed toward changing the pH of the vaginal secretions to the acid side, and the use of the many flagellacides which are now available. Follow-up care with urethral dilatation and instillation is required for the secondary proliferative formation of heavy granulation tissue of the involved urethra. Bladder involvement responds to irrigations with achroflavin, silver nitrate, Urolocide, or Achromycin. The male partner must always be suspected of harboring the flagellate and examined with this in mind.

Verruca Accuminata

Verruca accuminata has been reported involving the urethra. The so-called "venereal wart" is transmitted by sexual intercourse but may be acquired without such social contact. Symptoms may be non-existant other than for the presence of a palpable deformity in the region of the external urethral meatus. These are treated by excision, or probably best by fulguration rather than podophyllin.

Urethral-Vaginal Fistula

Urethral-vaginal fistula is rather rare. Widespread destruction of the entire base of the bladder and consequently the urethra, due to obstetrical injury, irradiation sequelae, or malignant disease, occurs infrequently. These fistulae are extremely difficult to close in the latter two instances, and are probably best treated by some type of diversion of the urinary stream. Urethral-vaginal fistula may follow excision of urethral diverticulum, however these fistulae, if small, may close spontaneously, providing diversion of the urine by indwelling urethral catheter is carried out. Rupture of an abscess of a paraurethral duct or gland into the urethra and vagina or incision of a suburethral abscess may produce a fistulous tract.

Anomalies

Absence of the urethra in the female has been reported, usually in conjunction with other marked congenital anomalies such as extrophy of the bladder. Partial formation of the urethral walls with atresia has been observed. A few cases of partial or complete duplication of the urethra are on record. These bifurcated canals must be distinguished from fistulous tracts. Congenital urethral valves probably occur rarely.

Anomalous urethral orifices in the urethra are

sometimes seen. This anomaly causes incontinence in females much more often than in males for the anomalous orifices are likely to be within the sphincteric mechanism of the male. This anomaly should be suspected in the incontinent female.

Hypospadias in the female is common and in no sense similar to hypospadias in the male. Ordinarily the urethra opens in the vestibule one half way between the clitoris and the anterior vaginal wall, but when it opens into the edge or directly into the vagina, as in hypospadias, it is more susceptible to ascending infection. Persistent cloaca is extremely rare.

Rare Diseases

Infection of the female urethra by tubercle bacilli is extremely rare.

Urethral calculi are usually secondary types.

Benign papillomas are occasionally encountered and they usually are found just within the meatus. Adenomas of the female urethra are uncommon and appear as painless nodules within the urethral meatus. Benign tumors originating in connective and muscular tissue are rare. The papillomas, adenomas, and benign tumors usually cause symptoms of obstruction and are best removed with electro-cautery. All urethral lesions should be microscopically examined.

Primary carcinoma of the female urethra is rare, but becoming more common because of the awareness that some "caruncles" are not caruncles as suspected, but actually a true carcinoma. It is usually found at the junction between the transitional epithelium and stratified squamous epithelium. Squamous cell type is the most common, but adenocarcinoma originating from glandular structures is observed. Sarcoma is very rare, however the urethra is the most frequently involved of all the urinary tract organs by melanoma. The treatment for carcinomas, sarcomas, and melanoma is disappointing, with radical excision of the urethra and bladder with diversion of the urine by uretero-sigmoidostomy or ileal-segment transplant providing some measure of comfort before death. The high degree of malignancy of these tumors, the late stages at which they are first seen, and the age of the patient all contribute to a poor prognosis.

Secondary carcinoma of the urethra is not unusual and many malignancies of bladder, cervix, vagina, vulva, and uterus may involve the urethra. These are incurable, miserable lesions and may best be treated by palliative measures directed at comfort for the patient by urinary diversion.

Summary

1. The urethra is partly or completely responsible for a large percentage of urinary disturbances in females.

2. Urethral disease in women and girls is often overlooked or neglected, particularly when the disease process fails to reflect positive urine findings.

3. Symptoms of urethral disease are generally of greater magnitude than the extent of disease found.

4. The most common lesions of the urethra are reviewed. In some, the diagnosis may be made by inspection and/or palpation. In others, urethrocystoscopic study is required for positive diagnosis.

5. A general treatment outline for these diseases is given.

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The Use of Hydrocortisone in Dysfunction of the Temperomandibular Joint

Dramatic relief of pain where least expected.

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THE PATIENT who complains of pain about the face, head and neck is common in a neurosurgeon's office. Tic douloureux is apparently adequately treated. True migraine, temporal arteritis, and histaminic cephalalgia are among the other well recognized causes of unilateral head pain. Dysfunctions of the temperomandibular joint apparently are the basis for many cases of atypical facial pain as first stressed by Costen in 1934,[1] and yet this condition is not discussed frequently by the medical profession and apparently Costen's syndrome is still being overlooked. Until the past year when I began to use hydrocortisone injections, I was never too sure of this diagnosis myself.

The recognized treatment of this condition is, of course, the restoration of the bite by dental prosthetics. Relief of pain is experienced only gradually over a period after the joint pathology has been corrected in this way. For a man engaged in a specialized referral practice, the good results tend to be lost from view. As a corollary of this, the bad results of dental treatment for vague types of facial pain are soon belligerently presenting themselves again whether the cause be due to misdiagnosis or inadequate restoration of the bite. For these reasons the diagnosis of temperomandibular joint dysfunction was formerly made with some misgivings.

The injection of hydrocortisone into the joint gives relief of pain immediately or in a few hours and this pain relief lasts three to four weeks and often longer. This then provides both the doctor and the patient with proof of the diagnosis and also gives the patient relief from this pain while his dental work is being done. Perkey first described hydrocortisone injections into the temperomandibular joint in 1955.

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Based on a brief (but pleasing) experience with this technique, I began rather dogmatically injecting hydrocortisone into the tempormandibular joint of every case of atypical facial pain and in many of the atypical cephalgias. This is a report of six months' experience. There were twenty-three of these patients and eighteen of them experienced relief of pain. Thirteen of these cases were predictable, that is, the diagnosis of temperomandibular joint dysfunction was suspected before the injection. In five of them, however, the relief was a pleasant surprise. In the five who had no relief, no ill effect seemed to have been encountered.

The temperomandibular joint is essentially a hinged joint but movement is possible in all directions except rotation. The head of the condyle is in approximation with the glenoid fossa but separated from it by a cartilagenous disc. This disc is attached to the joint capsule which is rather loose and permits wide excursions of the head of the condyle. Actually, the mandible hangs loosely from the rest of the skull but is supported by the sling of soft tissues consisting of the muscles and joint capsule. The muscles that act on the joint are the internal and external pterygoids and the masseter and the temporal muscles. The joint is directly ahead of the external ear canal and the chorda tympani nerve passes near it as do the branches of the mandibular nerve (especially the auriculotemporal which winds around the neck of the condyle before it ascends ahead of the ear). In such an area, the possibility for widespread referral of pain is likely although there is some dispute as to the mechanism.[1-3]

The types of discomfort associated with the dysfunction of the temperomandibular joint can be divided into three groups, namely: (1) arth-

ritic pains, (2) muscular pains, and (3) neuralgic pains.

The first is local discomfort with association of actual arthritis and cartilagenous changes in the joint. I have treated none of these cases. I have seen several patients in passing who complained of snapping and creaking and apparently intermittent subluxation of the joint and these were referred to their respective dentists for treatment. I have seen no other patients who are able to spontaneously refer their pains directly to the temperomandibular joint. I would imagine that such patients would immediately seek the help of their dentist or oral surgeon or possibly the otologist and not be referred to the neurosurgeon's office.

It is also interesting to note that of the fifteen of these patients who had x-rays taken, joint pathology was noted in only one. Sharp limitation of motion of the joint was noted twice and increased motion of the joint noted three times. Of course, degenerative changes are widely reported as occurring in the temperomandibular joints but amongst a group of patients with atypical facial pain as seen in a neurosurgeon's office, the confirmation of the clinical diagnosis by Roentgen rays was disappointing. It is also interesting that ear complaints, thought to be due to subluxation of the condyle backwards, pressing on the middle ear structure, were inconspicuous in this series of patients. Costen[3] reports that impaired hearing and tinnitus were very frequent but this was a complaint of only one of our patients in addition to the facial pain. Both complaints were relieved by the hydrocortisone injection. Again I would imagine that patients with such complaints would be seen and treated by the otologist first.

The second group of patients are those who have pain apparently from tension upon the muscles surrounding the joint. That there is imbalance of muscular action in cases of malocclusion has been shown electromyographically by Perry and Harris.[4] Ordinarily in normal individuals, the temporal and masseter muscles function synchronously, the temporal muscle coming into action just before the masseter. In cases of malocclusion the synchronous action of the muscles about the jaw is lost and often the masseter seems to be having its contraction before the temporal muscles begin. It is felt that the lateral pterygoid and the temporal muscles are over stretched in cases of malocclusion and the overstretching causes increased tonus, all resulting in aching pain in the area of the muscle. The cases of aching pain over the side of the head, over the eye, and across the bridge of the nose are thought to be due to improper stretching of the temporal muscle, while the pain that is referred deep behind the eye or down into the tonsillar fossa or the throat, is felt to be due to involvement of the lateral pterygoid muscle. The confusion with glossopharyngeal neuralgia arises in this group.

There were thirteen patients in whom I strongly suspected the diagnosis before the injection of hydrocortisone was made and they make up this group with pain referred from the involved muscle. They all had tenderness over the temperomandibular joint. It was unequivocal. They all had obvious malocclusion. Eight of them gave a history of pain over one year's duration which was mild when it began but after a few teeth had been pulled in an effort to relieve the pain, the syndrome really began in earnest. The pulling of teeth would seem to accentuate the malocclusion but there must be some people who are benefited by the extraction of teeth in such a situation because the practice is so widespread. We probably are seeing the patients who don't get a satisfactory dental prosthesis made for one reason or another. Three of these cases were post-traumatic. They had obvious malocclusion and irregularities in the movement of the jaw. Possibly they might have survived the trauma without residual pain had not the pre-existing dental problem existed.

The third group is the type of person whose major problem or complaint is of the neuralgic type of pain. All of these had a mild constant aching pain in the cheek which was secondary to the severe flashes of neuralgic pain. There is some dispute as to whether there is any direct compression or stretching of nerves. Two of these patients had sharp radiating pains into the lateral side of the pharynx and pain referred into the ear. These pains were initiated by chewing and there was no trigger zone found over the distribution of the glossopharyngeal nerve. Another one of these had primarily a burning, tingling pain in the lateral side of the tongue which would be worsened by chewing or by pressure over the temperomandibular joint. Another had a real trigger zone within the hair line and this was

apparently an involvement of the auriculotemporal nerve. Another patient, who had had a tumor at the angle of the jaw removed, had widespread facial aching pain but also had a bona fide trigger zone in the pinna of the ear which caused radiation of the pain into the ear and into the throat. All of these patients had obvious malocclusion. They all had some element of aching pain in the cheek. In only one could I reproduce the neuralgic pain by pressure on the temperomandibular joint. However, they were all dramatically relieved by injection of hydrocortisone into the temperomandibular joint.

It is to be noted that several of the patients in the second group, who had predominantly muscular pain, had occasional flashes of neuralgic pain that couldn't be reproduced. These seemed to be mostly in the mandibular division.

Of the five people injected with hydrocortisone who experienced no relief, one of these turned out to have a glossopharyngeal neuralgia with a trigger zone in the base of the tonsillar fossa that was first overlooked. Another one had apparently a condition that Costen calls a masseter tremor. She had had an attack of chorea with rheumatic fever seven years previously and has been very nervous and agitated since. She had a fairly typical distribution of aching pain over the temporal and masseter muscle. There was tenderness over the temperomandibular joint. However, she had a rhythmical tremor of both masseter muscles and Costen has found in such cases with a masseter tremor, that treatment of any kind is of no avail. No relief was accorded the other three patients and the proper diagnosis is not clear.

There is another interesting case which is not included in the series because the patient didn't have atypical facial pain. He really seemed to have a typical trigeminal neuralgia of the infraorbital nerve with a typical trigger zone at the edge of the nostril. He had tenderness over the temperomandibular joint and a malocclusion. A hydrocortisone injection to the joint reduced the pain considerably and a repeat injection three days later relieved it entirely. This was very surprising but there are two other cases not in the series also that led me to inject the temperomandibular joint in what seemed to be a real tic douloureux. Those patients had real trigeminal neuralgia also, one with a trigger zone in the upper lip and one with a trigger zone in the lower lip. Using absolute alcohol, I injected the infraorbital nerve in the first case and the mandibular nerve in the second, producing appropriate anesthesia and relief of the trigger zone and the neuralgic pains. Following the relief of the neuralgic pains, both patients complained a week later of aching over the cheek and there was tenderness over the temperomandibular joint. Hydrocortisone injection into the joint relieved this pain. I hold no brief for temperomandiular joint dysfunction as the etiology of tic douloureux. However, many of these patients have had teeth removed and will have malocclusion so that there will be ample justification to pursue this thought further.

The technique of injection is rather easy and I think its use should be widespread. In most of these cases, the joint is extremely mobile and as the patient opens his mouth about half way, the head of the condyle can be seen moving out of the glenoid fossa. After cleaning the skin with alcohol, a 23-gauge needle is inserted, without a procaine wheal, one finger's breadth ahead of the external ear canal and the needle is directed upward into the glenoid fossa. After striking the roof of the fossa, the needle is withdrawn slightly and about 1 cc. of hydrocortisone is injected. Occasionally, when the relief is not striking, the needle is withdrawn and redirected to the head of the condyle where another synovial sac lies underneath the meniscus.

Of this series, two patients have returned at intervals of two weeks to a month for a total of three injections apiece. All these patients have been referred to their respective dentists for the appropriate restoration of their bite. Only four of them have obliged. Three patients could not be contacted and the rest are relieved of pain and are apparently awaiting developments.

Conclusion

I want to stress that the definitive treatment of this condition is in the province of the dental profession, that is, elimination of the malocclusion by proper dental prosthesis. There are apparently some few cases of bony involvement of the joint, an example of which I have not seen, for which surgery in the joint is indicated. Most of these patients have seen many doctors and dentists and have had a variety of diagnoses and treatments prescribed without much help and as a group they tend to be suspicious of any new diagnosis

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Whiplash Injuries of the Spine

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INTEREST in whiplash injuries of the spine, especially of the cervical spine, has been stimulated by the frequency with which these cases are encountered in the office, especially for an evaluation of their injuries both for the plaintiff's attorneys and for the defending insurance companies.

Since it has been estimated that about 15 per cent[1] of all automobile accidents resulting in death, injury or property damage are caused by rear-end collision, undoubtedly many of these cases are frequently encountered in the general medical practice. Each patient who has been seen with this type of injury has had symptoms characteristic of neck sprain. In the case of a simple sprain, the symptoms consist of pain in the lower cervical spine with limitation of motion, spasm and tenderness of the posterior cervical muscle, and in most instances tenderness of the spinous processes of the sixth and seventh cervical vertebrae. Quick or sudden movements of the neck usually will increase the symptoms, especially in the acute cases. Some patients complain of upper thoracic and shoulder girdle pain with tenderness at times being elicited in these same areas.

In the early descriptions[1] of the mechanism of injury in whiplash it was interpreted as a sudden and forcible flexion of the neck followed in some instances by several other less violent oscillations of the neck in alternate flexion and extension. However, recently it has been shown that the original injury[2,3] is one of extension of the neck and spine, followed secondarily by flexion of the neck and spine. The basic injury is one of mechanical trauma to the supportive ligaments of the cervical spine. The severity of the sprain will vary from case to case, but the seriousness of the injury is dependent upon the number and variety of complicating conditions. The most common complication is cervical radiculitis. These patients complain of intense pain in the posterior cervical region with radiation of the pain into the occipital region of the skull, shoulder girdle, upper anterior chest or even into the upper extremities. The pain often will be intermittent in type and follow a pattern suggesting irritation of the fifth, sixth or seventh cervical nerve roots. Severe radiculitis is usually accompanied by marked spasm of the cervical muscles. Not infrequently a number of these patients will give a history and show symptomatic evidence of a cerebral concussion. Some may suffer a momentary lapse of consciousness while others will give a history of being bewildered, stunned or dazed. Headache usually develops within a few minutes to hours after the injury and nervous symptoms are especially intense in this group. Many of the patients who have had a milder form of whiplash merely complain of discomfort in the neck a few hours after the accident, but often awaken the next morning with marked stiffness and discomfort in the posterior cervical area.

In any of the patients there may be marked neuromuscular tension, restlessness, irritability, vasomotor instability, recurrent headaches, mood changes and general nervousness. These symptoms may be intermittent, but have a tendency to recur. The headache, dizziness and tight feeling across the forehead often are interpreted as being functional in character. However, angiogram studies[4] in cases of the above-described bizarre symptoms have shown partial occlusion of the vertebral artery. It is conceivable that a whiplash might produce cervical muscle spasm which in turn would produce angulation and partial occlusion of the vertebral artery.

The complication that has been most disturbing or distressing both to the patient and to the physician is a persistent psychoneurotic reaction. It seems that circumstances inherent in whiplash injury tend to make all patients prone to the development of this disturbing emotional reaction. The onset of the psychoneurotic tendency reaction can best be explained by the description of

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a typical case. The accident comes on without warning, and in which the patient receives a sudden, violent and unexpected jolt. The patient usually is not incapacitated, and, therefore, has the opportunity for the development of considerable antagonism towards the offending motorist. A tiring investigation may follow during which time the patient is uncomfortable, and also somewhat bewildered. Then, after an examination in an emergency room or a doctor's office which usually discloses little, if any, injury the patient is sent home with no specific explanation of his injuries and a vague outline of treatment. Several hours to a day later the patient may develop distressing symptoms of pain in the neck with radiation at times into the head or down into the arms. Because most patients have not experienced these disturbing sensations before they are prone to develop anxiety and neuromusclar tension. The first few hours or days after the accident seem to be the critical period in the management of patients who have suffered a whiplash injury if a severe psychoneurotic reaction is to be minimized or avoided. Whenever a patient is carefully examined soon after the accident and informed of the nature and extent of his injuries, following which a program of treatment is carefully outlined, the psychoneurotic reaction often will be minimized or appear not at all. However, if the patient is inadequately informed of his injury and becomes apprehensive by the uncomfortable and aggravating symptoms that develop hours to a day after the accident many of them become seriously disabled by a psychoneurosis.

As far as complications of the lower back are concerned, symptoms will develop here in about one-third of the cases. The injury usually consists of a sprain or mechanical trauma of the supporting ligaments of the lumbar spine. Radiculitis may also develop with radiation of the pain into the leg. It is uncommon, but a disc injury may be seen. A minor complication which does happen frequently is trauma to the anterior chest wall by the steering wheel. In most instances, however, this is not serious.

When examining patients following whiplash injury, a careful detailed neurological examination should be done. Also, a thorough evaluation of the head, neck and upper extremities must be carried out to rule in or out fracture, subluxation or severe muscle strain. Adequate roentgen examination of the cervical spine must be done with lateral films containing both flexion and extension views of the cervical spine. Oblique views at times may be necessary to disclose a fracture of the lamina or of one of the pedicles.

As far as treatment is concerned, hospitalization is indicated if there are signs of fracture, subluxation, serious neck strain or head injury. In the other cases the patient can usually be managed at home. Bed rest for the first two or three days is usually indicated and often advisable. A cervical collar should be applied if there are enough findings to warrant support to the head and neck. The collar can be made quite easily out of felt, sheet wadding and stockinette. If the patient is in need of immobilization for a fracture, subluxation or severe strain then plaster seems to offer the best form of support.

Several writers have noted that the greater the efficiency of the immobilization the greater the chance for neurosis. Heat may be used to relax muscle spasm. In cases where there is severe muscle spasm present traction may be carried out by means of a Sayre type of head halter. Five to seven pounds of weight will provide sufficient traction to relax the cervical muscles. At times it is necessary to use intermittent traction as this seems to offer more relief than steady, continuous traction.

Symptoms of tension are often alleviated by warm tub baths.

It has been pointed out that patients with fractures of the spine usually have less psychoneurotic symptoms than those with whiplash, and this of course could be expected. The patient with a definite injury, such as a fracture or true subluxation does obtain as a rule immediate treatment and is soon satisfied that everybody is concerned, and therefore is giving him every care possible. However, the patient who has suffered even a rather severe whiplash often is given no treatment or has so little attention paid to him that he immediately develops a feeling that no one is concerned about his injuries in spite of the fact that he himself knows that he is having a lot of pain and there must be something wrong. In most instances, when no fracture or serious injury can be found, symptomatic but sympathetic treatment is indicated. It has been the writer's experience that many of these patients may have symptoms lasting for a year or eighteen months.

Symptoms suggesting cervical disc protrusion are not common and usually clear up with conservative therapy.

In summarizing, from a clinical standpoint there are multiple organic pathological factors involved in the radiculitis that follows a whiplash injury. It is reasonable to assume that there is trauma to the spinal ligaments following such an injury. In some of the severe cases it is possible there is some hemorrhage and edema in the region of the damaged ligaments which give rise to nerve root irritation. In the acute cases swelling and vascular congestion of the nerve roots and narrowing of the foramina due to bulging of the intervertebral disc or swelling of the adjacent ligaments may be important factors producing symptoms. In chronic cases fibrosis, which is a late manifestation of hemorrhage and edema, may involve the nerve roots directly, produce adhesions between the spinal ligaments and the nerve roots. In addition to the organic pathology of whiplash injury there is always the ever-present personal reaction of the patient. This factor particularly complicates evaluation of symptoms, treatment and recovery. These patients as a group are more apprehensive, tense and anxious than those suffering injuries elsewhere in the body. It is possible injury of the head and neck represent a special insult to the personality structure of the injured person. A recent review of 100 cases of whiplash injury of the cervical spine one year following settlement of the litigation showed 88 per cent had no symptoms that required treatment while another 5 per cent had symptoms but refused treatment leaving only 7 per cent who had symptoms requiring treatment. It is evident from this report and the writer's own personal experience that the handling of whiplash injuries by the physician requires his utmost skill and diplomacy.

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THE USE OF HYDROCORTISONE IN DYSFUNCTION OF THE TEMPEROMANDIBULAR JOINT

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and treatment, especially if it would be an expensive dental restoration. The injection of hydrocortisone has not only provided immediate relief but more importantly, has furnished proof both to the doctor and to the patient of the underlying cause of pain.

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Combined Renal and Biliary Tract Surgery

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SELDOM is one major surgical procedure combined with another operation of equal magnitude. As a general rule, it is best to limit the surgical treatment to the disease causing the symptoms. On occasion, preoperative studies may disclose two conditions, either or both of which may be the cause of symptoms, which require surgical treatment. If these two conditions are in the same operative field, then they may be dealt with simultaneously, providing they do not add appreciably to the operative risk and postoperative morbidity. Such an occasion may be the presence of right renal and biliary tract disease.

Undoubtedly, surgical procedures on the right kidney and biliary tract have been combined by many surgeons who have taken it for granted that what they were doing was not out of the ordinary. There is the story of a well-known surgeon who, on failing to find a suspected calculus in the right kidney, calmly enlarged his incision and proceeded to remove the gall bladder that did contain the stone.

During my training period, I had the opportunity to assist at a planned operation where the surgeon* performed a cholecystectomy, explored the common duct, and removed a right renal calculus through the same abdominal incision. To my knowledge, this planned procedure has not been described in medical literature.

In order that such a combined surgical procedure be selected, it is necessary that preoperative studies show that disease exists in both regions. If a patient has symptoms which suggest either biliary tract or right renal disease but which do not quite fit the clinical picture of either, then it is advisable to examine both the urinary and biliary tracts to see if coexisting disease is present. For instance, if a patient has right lumbar pain and intolerance to certain foods, it is well to examine both the right kidney and gall bladder by x-ray for differential diagnosis. On occasion, both may be found to be diseased and in need of surgical treatment.

Quite naturally, the kidney is considered a retroperitoneal organ to be approached through a lateral flank incision. On the other hand, the biliary tract is intraperitoneal in position and is exposed most satisfactorily by means of an anterior incision. Anatomically, however, the biliary tract and right kidney lie in close approximation. On the average, the right renal pelvis and gall bladder are located about the same distance from the midline and at about the same horizontal level. This is well illustrated by roentgenograms which often show gall bladder calculi superimposed on the right kidney.

Technically, exposure of the right kidney and gall bladder through a single incision is relatively easy. If this fact is better known, perhaps it will be used more often. With the patient lying on his left side, the usual lumbar incision is made to the mid-axillary line (Fig. 1). It is then directed anteriorly and cephalad below the costal margin to the border of the rectus muscle. The peritoneum is then opened and the operating table tilted towards the right side. Satisfactory exposure of the gall bladder and common duct can be obtained for the abdominal surgeon. (Fig. 2). Elevation of the kidney rest or flexion of the operating table may give wider exposure. After completion of the biliary tract surgery, the peritoneum is closed, and the table is returned to the horizontal position with the kidney rest elevated. The urologic surgeon can then carry out the procedure on the right kidney. No special problems have arisen postoperatively. Long follow-up examinations have demonstrated good healing. There has been no permanent damage of muscular function due to severance of the nerve supply.

Five cases are reported that have had combined right renal and biliary tract surgery in my practice in the past few years.

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*Dr. James T. Priestley, Rochester, Minnesota.

Case 1.—The patient, a woman aged fifty-seven, complained of dull aching pain in the right lower quadrant and flank that radiated to the scapular area at times. She also had "lots of gas" with some nausea and vomiting not related to any special foods. Bloody urine was noted on one occasion. She was told that stones were present in her left kidney a year before.

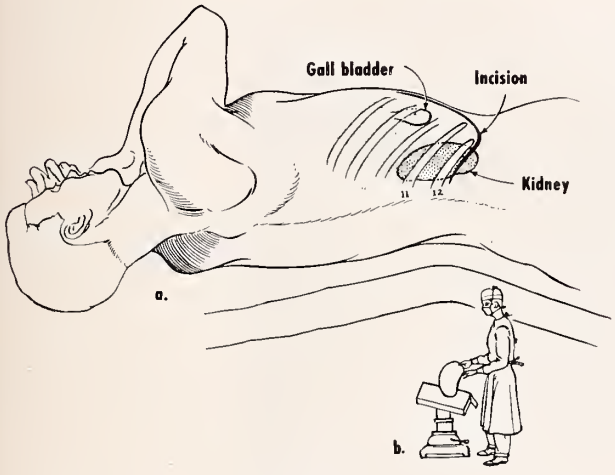


Fig. 1.

On examination there was no abdominal tenderness. Blood and urine studies were normal. Excretory urograms and retrograde pyelograms revealed small stones in a caliceal diverticulum on the left and a mild hydronephrosis and nephroptosis on the right. The right ureteral-pelvic junction was narrowed and the kidney showed delayed emptying. It was felt that these findings did not adequately explain the patient's symptoms. A cholecystogram revealed multiple non-opaque gall stones. Upper gastro-intestinal studies showed moderate gastric retention and a barium enema revealed diverticulosis. A chest radiograph revealed no abnormalities.

At operation on February 19, 1955 through a single lumbo-abdominal incision, a cholecystectomy and a Foley Y-plasty with nephropexy of the right kidney were performed. The postoperative course was prolonged due to femoral thrombophlebitis and right pyelonephritis. The nephrostomy tube was removed on the twenty-third postoperative day and the patient was discharged from the hospital three days later. The immediate result from the pyeloplasty was poor as the right pyelonephritis persisted. However, two years later the patient's family physician reported negative urine. The increased morbidity in this case could well be attributed to the magnitude of the procedure.

Case 2.—The patient, a woman aged fifty-five, had known she had stones in her right kidney for ten years. During the past year she had experienced upper abdominal pains followed by cramps over the entire right side of the abdomen, anteriorly as well as in the loin. The attacks almost invariably came on at night.

On examination, the entire right side of the abdomen and the epigastrium were tender. Urinalysis and blood studies were normal. X-ray studies of the upper gastro-intestinal system were normal. A cholecystogram showed a large gall stone but no function. Excretory urograms revealed two calculi in the lower right calyx.

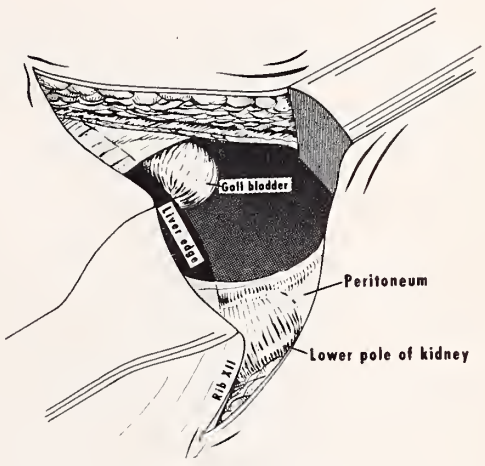


Fig. 2.

On December 9, 1953 combined operation was performed. At thick-walled gall bladder containing stones was removed. The common duct was visualized and found to be normal. The peritoneum was closed and the right kidney exposed. A calicectomy was done, removing the renal calculi with 23 grams of parenchyma which showed chronic pyelonephritis.

Postoperatively, the patient recovered from surgery satisfactorily and was discharged on the ninth postoperative day. According to her family physician, the patient had no complaints relative to the operation when seen three years postoperatively.

Case 3.—The patient, a woman aged fifty-eight, had complained of aching at night under the right costal margin and in the lumbar area. Appetite was poor and the patient had lost 20 pounds in weight. She had no bladder complaints.

On examination the patient was tender over the right renal area. Urinalysis and blood studies were normal except that the sedimentation rate was elevated to 46 mm. in one hour. A cholecystogram revealed gall stones (Fig. 3a). Excretory urograms showed a large extrarenal pelvis, slight caliectasis, and a normal right ureter (Fig. 3b).

At operation on December 10, 1954 a curved incision below the twelfth rib and below the costal margin was made. A Foley Y-plasty with excision of redundant pelvis was performed on the right kidney. Following that, cholecystectomy was easily performed by a general surgeon. The patient had a normal convalescence and was discharged on the eighth postoperative day. The splinting tube was removed on the seventeenth and the nephrostomy on the twenty-third postoperative day. A good functional result was obtained. Follow-up studies two years later have shown excellent wound healing and strength.

Case 4.—A young man, aged twenty-seven, was admitted to the hospital complaining of right costovertebral angle pain and gross total hematuria. Urograms revealed a branched calculus in the right kidney. Extrarenal calculi were also noted on the films. A cholecystogram revealed that these calculi were in the gall bladder (Fig. 4). On December 17, 1953 a cholecystectomy and right nephrolithotomy were performed through a combined incision. The postoperative course was satisfactory. The patient was discharged on the thirteenth postoperative day. Re-examination of the patient eighteen months later revealed a well-healed wound. Two-and-a-half years after operation a small recurrent calculus was noted in the right kidney.

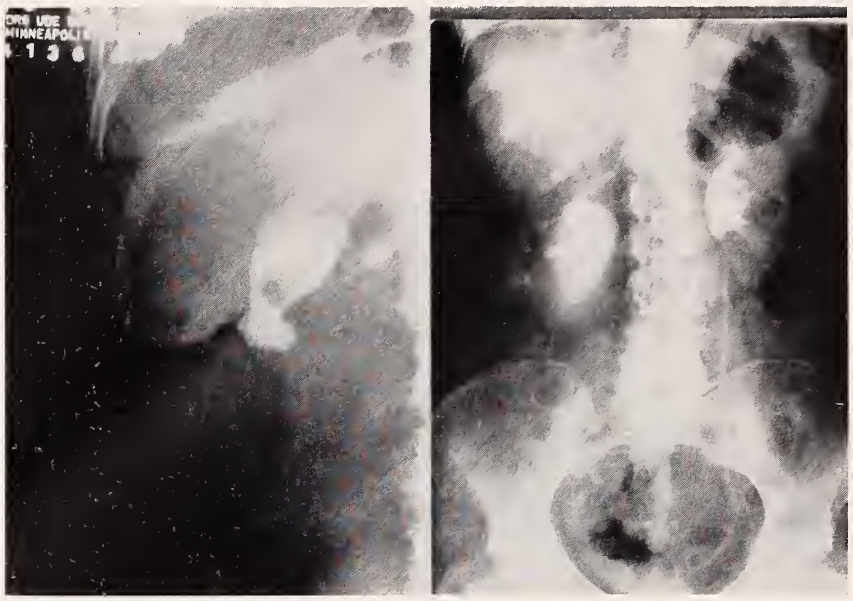


Fig. 3. (a) Cholecystogram showing large gall stone. (b) Excretory urogram right phydronephrosis.

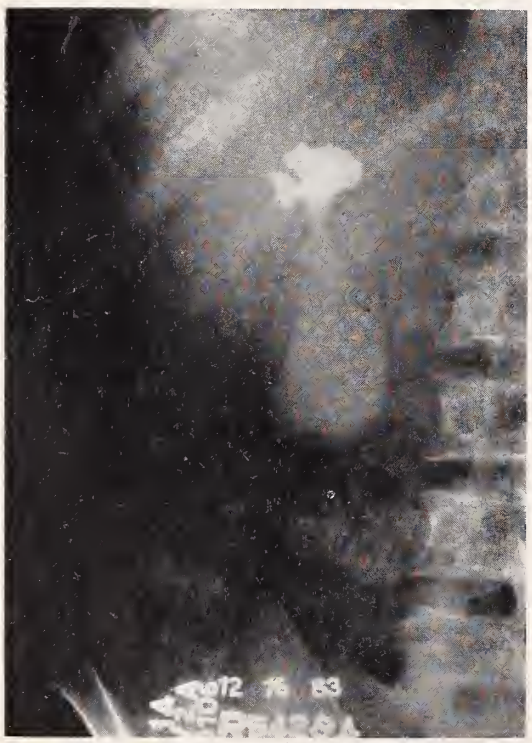


Fig. 4. Branched renal calculus (above). Cholecystogram with stones (below).

Case 5.—The patient, a man, aged sixty-four, was admitted to the hospital because of gross total hematuria and right low back pain. Past history revealed that he had been taking amphojel for abdominal distress. On physical examination, a right upper abdominal mass descended with respiration. Blood studies were normal except for an elevated sedimentation rate of 45 mm. in one hour. Urinalyses showed hematuria and proteinuria. Blood chemistry studies were normal. A chest film revealed a left upper subclavicular area of calcified granuloma which had not changed in four years. A plain film of the abdomen revealed a large calcified shadow overlying the right renal area. In a lateral film the shadow was anterior to the kidney. Excretory urograms and retrograde pyelograms disclosed a large right kidney shadow with distortion of the calices. Upper gastro-intestinal x-rays revealed a deformed duodenal bulb. The gall bladder showed no function by cholecystography.

On June 28, 1956, a right radical nephrectomy was performed, removing a large kidney containing a carcinoma. Through the same incision extended along the costal margin, the peritoneum was opened and a large calcified gall bladder was removed. The common duct was slightly dilated but not inflamed. Postoperatively, the patient's course was uneventful and he was discharged on the eleventh postoperative day. He was

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Stevens-Johnson Syndrome

The Need for Critical Evaluation Before Initiating Steroid Therapy

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WITH THE ADVENT of antibiotics the incidence, morbidity and mortality of infectious disease have has been notably reduced. As a consequence of this situation, along with the vast assortment of present-day pharmacological agents, syndromes that are apparently related to hypersensitivity phenomena have assumed a more prominent position in the practice of pediatrics. Among these syndromes is the Stevens-Johnson syndrome.

In recent years, the literature has been augmented with numerous case reports acclaiming the efficacy of ACTH and corticosteroid therapy of this syndrome but very little has appeared in print to provoke cautious evaluation of the possible hazards related to such therapy. Following is a case presentation of a death secondary to such therapy, along with a brief résumé of the clinical picture and therapeutic regimen of Stevens-Johnson syndrome.

Historical Background

In 1922, Stevens and Johnson[1] reported two cases of a disease which had severe cutaneous, mucosal and systemic manifestations. Their summary, in part, stated:

"Here is a syndrome of dramatic onset with fever, conjunctivitis and cutaneous eruption. The child is prostrated, the mouth and tongue are inflamed and raw, the eyelids are swollen and pus streams from the eyes. There is a course of three or more weeks of high fever, with leukopenia. The eruption, unlike any hitherto described, comes out progressively, for two weeks or more, matures and resolves in horny crusts, in the order of its appearance. The temperature falls with this resolution of the skin lesions. . . ."

After a time, it was realized that this condition was merely a representative of the severe portion of the spectrum of disease which was represented on the milder portion of the scale, by erythema multiforme exudativum of Hebra. Subsequently, it was suggested that the mild and severe forms of erythema multiform exudativum should be designated with the terms minor and major respectively.[2,3] Robinson and McCrumb,[4] in an attempt to clear the confusion of nomenclature, suggested that the following diseases be considered part of the ocular mucous membrane syndrome of erythema multiforme exudativum: Ectodermosis erosiva pleuriorificialis, Stevens-Johnson syndrome and Behecet's disease. Other writers suggest the addition of dermatostomatitis, acute ulcero-membranous stomatitis and the mucosal respiratory syndrome to this group.[5,6]

Undoubtedly, grouping these names under one title would be of benefit. However, because Stevens-Johnson syndrome is a commonly accepted term which represents a clinical entity to a vast number of physicians, this title probably should be given priority until a specific etiologic agent is found.

Stevens-Johnson Syndrome

Skin and Mucous Membrane Lesions.[1,2,7]—Aside from the general prostration of the patient, the skin and mucous membrane lesions are the most striking feature of this disease. Initially, the lesions are transiently macular in type. They become oval, dark red to purple and are separated by normal skin. Rapidly the lesions become subepithelial and intra-epithelial vesicles and bullae. The predominant color of the maturing eruption is brown to purple. Frequently the involved areas are tender. The eruption may begin anywhere, but often first appears on the dorsal surfaces of the hands and feet. Not uncommonly, the palms and soles are severely involved. Usually the scalp is spared. The lesions spread to involve the entire body including the conjunctiva, oral and nasal mucosa, glans penis and scrotum in the

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male, mucous membranes of the external areas surrounding the urethra and vagina in the female, and occasionally the peri-anal areas. There is a tendency for the eruption to present itself in a series of crops over a period of from seven to fourteen days.

The lesions of the oral mucous membranes are commonly very widespread and destructive. Large areas of ulceration develop. The ensuing necrosis of the mucosa leads to formation of a grayish-white pseudomembrane. The tongue is ulcerated and denuded. The swelling, redness and ulceration of the lips present a typical picture. The involvement of the conjunctiva with subsequent ulceration of the various layers of the globe may evolve into varying degrees of serious optic inflammation.[2]

(In the original cases of Stevens and Johnson, one of their patients had unilateral corneal clouding, while their second patient was left totally blind after a siege of bilateral panophthalmitis).[1]

Other Findings.—Splenomegaly and lymphadenopathy are uncommon in this syndrome.

Not infrequently there is an accompanying bronchiolitis or patchy atypical pneumonia. Of the deaths reported, the majority had rather extensive pulmonary inflammation.[2]

Clinical Course.—The prodromal period has a duration of from one to thirteen days. Pharyngitis, fever, malaise, coryza and cough are frequent antecedent symptoms. As the eruption appears and spreads, the patient becomes febrile and very weak. The picture of profound weakness and prostration is as intimate a part of SJS as the eruption. This diagnosis is rarely, if ever, justified if the patient is not acutely ill.[8] An interval of one to three weeks passes as the lesions regress and the patient becomes afebrile and less toxic. The areas of skin involvement tend to peel in sheets and healing areas are relatively depigmented in comparison with the highly pigmented residual crusts.

The disease, for the most part, can be thought of as a self-limited entity, but secondary complications may completely dominate the clinical picture.

Although Ashby[2] reported a relatively high incidence of deaths in his collection (eight of eighty-one) in 1951, the tendency to report more cases, along with general, more widespread recognition of this disease, has subsequently shown the mortality rate to be in the neighborhood of 1 per cent.[6] There is little question that improved modes of therapy also have influenced this figure.

The impression that the incidence of residual visual impairment has been decreased by proper management is probably justified.[9]

Laboratory Findings.—The laboratory findings are non-specific and consequently non-diagnostic. Leukocytosis is the rule with a relative increase in polymorphonuclear cells. However, a small percentage of cases will manifest a leukopenia. The sedimentation rate often is moderately elevated. As mentioned previously, the roentgenological examinations of the chest frequently reveal areas of patchy pneumonitis. The electrocardiograms are almost always normal although a few cases of transient myocarditis have been reported.[10] Blood urea nitrogen and serum electroytes are altered in cases with attendant dehydration. Occasionally pleocytosis is noted in the spinal fluid.[10]

Etiology.—The disease-complex is usually limited to the first three decades of life. Over 75 per cent of reported cases have occurred in males.[11,12] The months of January and February are the peak period for occurrence. There is a minor incidence peak in the autumn months.[11]

The etiology of Stevens-Johnson syndrome is unknown. Many efforts to incriminate a particular virus have been futile. On two occasions, the herpes simplex virus has been isolated from active lesions.[13,14] Some authors discount these rare successful attempts as examples of erroneous diagnosis, or presence of the ubitquitous herpes virus coincidentally with Stevens-Johnson syndrome.[7]

Anderson, Bolin, Sutow, and Kitto[15] were successful in inoculating vesicular fluid into the scarified corneas of rabbits' eyes with resulting keratoconjunctivitis. They then demonstrated acidiophilic cytoplasmic inclusion bodies in the superficial corneal epithelium and in mononuclear cells infiltrating the limbus of the cornea, as well as the large mononuclear phagocytic cells in the lamellar layer of the cornea. Their inability to find intranuclear inclusion bodies, their lack of success in producing encephalitis with intracerebral inoculation of Swiss mice and lack of serological evidence led them to conclude that the herpes simplex virus was not the microorganism involved.

The Stevens-Johnson syndrome has been seen following mumps, primary atypical pneumonia, and psittacossis. The typical clinical picture has been seen after smallpox vaccination[16] and was recently reported after Salk vaccine injection.[17]

Numerous drugs have been associated with Stevens-Johnson syndrome. However, only a proprietary anti-pyrine[8] drug and sulfonamides[18] have been shown capable of producing exacerbations of this syndrome in selected subjects. Penicillin, salicylates, phenopthalein, barbiturates, cincophen, bromides and common antipyritics have also been implicated as having an etiologic association.[6]

Generally, it is postulated that because of the several known incidents of association of SJS with drugs, and the relative lack of proof for an infectious etiology, that SJS is a non-specific hypersensitivity response to a number of environmental factors.[19,20] This includes the likely possibility that the syndrome can be initiated by infectious processes.

Treatment.—Primarily, the treatment of the Stevens-Johnson syndrome involves proper use of intravenous fluid therapy, suppression of secondary bacterial infection, maintenance of satisfactory nutrition, protection of the visual apparatus, and general good nursing care.

The large areas of denuded body area may exude quantities of serum necessitating replacement by transfusion of blood and plasma. Sterile technique in such cases will help prevent secondary infection of the exposed body surface. Care of the eyes with moist packs, antibiotic drops and ointments and topical steroids may be very important in preserving sight.[21]

Prevention of bacterial complications with antibiotic therapy appears to be a generally accepted procedure. Care of the mucous membranes of the mouth concerns the maintenance of good hygiene with use of swabs and mouth washes.

Denuded areas in the perineal region can be covered with a bland ointment containing a nonsensitizing topical anesthetic and possibly an antibiotic.

Over the past several years there have been many reports of the value of systemic steroid therapy. These reports have been, almost wholly, favorable.[11,22,23,24] Indeed Weeks and Lehman[24] stated, "We feel that as soon as the diagnosis of erythema multiforme exudativum (Stevens-Johnson syndrome) is made, ACTH or cortisone therapy should be started at once. . . ."

An occasional author writes that the course of the disease was not altered[5,12,25,26] by such therapy. Several writers [5,12] point out that this syndrome is self-limited and the danger of complications resulting from steroids should be sufficient deterrent from employing those potent drugs in all but the severest cases and those cases in which dangerous opthalmic involvement is present.[21]

Review of the literature for evidence supporting this admonition against indiscriminate usage reveals very little pertinent information.

To the best of our knowledge, two case reports and a notation of another case appear in the literature concerning patients who died while on steroid therapy.

Womack and Randall[14] report a fatal case of a nineteen-year-old girl who had a rather typical course until she developed a severe leukopenia and severe anemia along with a deteriorating general picture. Chloramphenicol was not administered until ten days after the blood changes became evident. Low doses of ACTH (an initial dose of 75 mg. followed by 20 mg. a day) were given for several days. Because of pyrexia, chloramphenicol therapy was resumed. Although her leukopenia relented some, her leukocyte count remained well below normal levels. Adequate hemoglobin levels were maintained with frequent transfusions. She became progressively worse. Terminally, she received large doses of cortisone (200 mg. for one day, 400 mg. the next, and 600 mg. the last day) without benefit. Necropsy revealed hypoplasia of the bone marrow of undetermined cause, pneumonia, myocarditis, and infarcts of the kidney and spleen. The combination of the unusual hematologic problem and the rather low doses of ACTH, regardless of the terminal massive cortisone therapy, make it difficult to justifiably ascribe this patient's demise to ACTH and cortisone administration. It should be noted that this is one of the few recorded cases in which the herpes simplex virus was demonstrated histologically and serologically. It has been suggested that this case does not represent a case of Stevens-Johnson syndrome, but rather a generalized herpes simplex infection.[7]

Short[27] reported a case of an eighteen-year-old girl who developed Stevens-Johnson syndrome after sulfonamide therapy. She was admitted in a semi-

comatose state with findings of bilateral pneumonia as well as a typical muco-cutaneous picture. She was treated with chlortetracycline for two days without benefit and then ACTH (100 mg. per day) was given for two days. Her condition deteriorated and she was given cortisone (60 mg. over one day). Her course continued rapidly downhill. She was then given several 25 mg. cortisone injections over the better part of a day. Despite 300 mg. of cortisone administered over the previous twenty-four hours, she expired.

This case serves to illustrate a situation in which steroid therapy apparently did not benefit the patient. Once again, it is doubtful that steroid therapy complications were present.

Good, Vernier and Smith[28] in their article concerning complications of steroid therapy, mention one case of Stevens-Johnson syndrome treated with cortisone, ensued by staphylococcal septicemia. Fortunately treatment was successful. They also note a case of Stevens-Johnson syndrome treated with ACTH which resulted in the patient's death. This appears to be the only case of death resulting from ACTH or cortisone therapy of Stevens-Johnson syndrome noted in the literature. This case is presented here, in detail, along with another that points up the feasibility of a regimen of conservative supportive therapy in moderately severe cases.

Report of Case

Case 1.—This five-year-old girl was admitted to Minneapolis General Hospital for the first time on January 3, 1951. She had been sick for two weeks with the primary complaint of lethargy and mild cough. Three days prior to admission she spiked a temperature to 105 degrees. She was seen by her family physician and given oral sulfa tablets. (His diagnosis was not reported.) Her fever remained at 104 degrees. She became more lethargic and vomited solid foods. She also complained of "aching in her bones."

Past medical history revealed that she had rubeola and pertussis approximately five months before. Several of her siblings had upper respiratory infections, but were not very ill.

Developmental history was non-contributory to her illness.

Physical examination revealed an ill-looking, lethargic, small five-year-old white girl. Her temperature was 103.8 degrees, pulse 120, respirations 24 per minute. She weighed 14 kilograms. There was mild injection of both tympanic membranes. The nose and throat were normal. Her lips had a dark red hue. The lung fields were clear to percussion and auscultation. The examination of the heart was unremarkable. The liver and spleen were not palpable. The genitalia were normal as were the extremities. There were a few shotty cervical nodes. Rectal examination revealed a mass of hard feces. The deep tendon reflexes were generally diminished.

Admission laboratory findings included a hemoglobin of 14.8 gm. per cent, white blood count 5,100, with 70 per cent polymorphonuclear cells, 29 per cent lymphocytes, and 1 per cent monocytes. Urinalysis was normal, the specific gravity being 1.028. The sedimentation rate was 30 mm./hour. Chest x-rays were reported as negative. The EKG was also normal. The VDRL was reported as negative Penicillin therapy was begun (100,000 units intramuscularly every eight hours) for otitis media. On January 5, the patient was noted to have pronounced pharyngeal injection. She had also developed a "purple red" discoloration below her eyes and over the bridge of her nose. Her conjunctiva had become diffusely, but mildly injected. On January 6, the patient was noted to have rhinorrhea, a red coated tongue and vesiculobullous lesions on her lips as well as a further progression of the discolored area below the eyes and over the bridge of the nose. She also began to develop "linear red flat lesions on her trunk and upper arms." A Grade I systolic murmur was heard along the left sternal border. No tachycardia was present. On January 8, her leukocyte count was 4,500 with 51 per cent polymorphonuclear cells, 41 per cent lymphocytes, 2 per cent monocytes, 5 per cent eosinophils, and 1 per cent basophils. Her temperature was normal. A urine specimen taken that day (because of the complaint of dysuria) was reported as containing eight to twelve pus cells per high power field. A subsequent culture grew colonies of Pseudomonas aeruginosa. A Lupus Erythematosus clot test was read as negative. The patient's general condition did not change.

On January 12, the patient had developed marked edema of the eyelids and severe conjunctivitis. The mucous membrane lesions had progressed to a stage consisting of vesicular lesions over the buccal mucosa and tip of the tongue. The diagnosis of Stevens-Johnson syndrome seemed fairly well established with this picture.

On January 15 several of the flat lesions in the right axilla became bullous in character. The lesions of the lips and oral cavity became more pronounced and painful. Chlortetracycline therapy was begun (250 mg. three times a day). Penicillin had been discontinued one day previously. Scrapings from the conjunctiva were stained and examined microscopically. No cytoplasmic or intranuclear inclusion bodies were found. The leukocyte count at that time was 5150/mm.3, with a normal differential. On January 19 the skin of the arms and hands became involved with vesiculobullous lesions. The eye lesions had not changed in character. Topical opthalmic hydrocortisone application was begun.

On that same day systemic therapy in the form of ACTH was given in the dosage of 20 mg. every six hours, intramuscularly. Bone marrow biopsy was performed and reported as normal. Despite several days of ACTH administration, the lesions did not regress and on January 24 ulceration of the neck, knuckles, and vulva was noted. However, the conjunctivitis and periorbital edma had improved. ACTH dosage was

reduced to 10 mg. every six hours. On January 26 the eruption, for the first time, began to fade and heal. At that time the white blood count was 13,450 with 85 per cent polymorphonuclear cells, 12 per cent lymphocytes, and 3 per cent monocytes. Urinalysis several days before, revealed five to ten plus cells per high power field. Proteus was cultured from this specimen in significant concentration. On January 29 the leukocyte count was 20,350 with 81 per cent polymorphonuclear cells, 15 per cent lymphocytes, and 4 per cent monocytes. Urinalysis revealed eight to ten pus cells per high power field. Subsequently, Proteus was once again cultured from the urine. Chloramphenicol therapy was begun (250 mg. four times a day). At approximately the same time, the lesions of the trunk, neck, genital area, and eyes had vastly improved. The right axillary area was healing very well. The patient simultaneously developed a distended abdomen, and though she appeared to have some pain, she denied its presence. The abdominal distention continued and the patient was somewhat anorexic. On February 2, ACTH dosage was reduced to 10 mg. every twelve hours. Her abdomen remained distended and was somewhat diffusely tender on palpation. There was tympany to percussion.

The previously noted systolic murmur was no longer heard. Chest x-rays taken at that time were read as normal. Roentgen studies of the abdomen demonstrated only a moderate amount of air and fecal material in the colon without evidence of free air, ileus, or obstruction.

The next day it was noted that her right hand and face were somewhat puffy. There were no other significant findings. The patient ate a fair supper and was singing with the nurses before she was put to bed. At 7 a.m., February 4, she was found in bed with a generalized major motor seizure. Intravenous sodium amytal and rectal diphenylhydantoin resulted in some amelioration of the convulsions. Within a half hour the patient, who was comatose, began expelling "coffee ground" material in copious amounts from her mouth and nose. Her blood pressure became unobtainable and her temperature was 106 degrees rectally. She became markedly cyanotic and died. Permission for autopsy was refused.

Case 2.—This five-year-old girl was admitted to the Minneapolis General Hospital on September 16, 1956, with the complaints of skin rash, swollen eyes and sore mouth of four-days duration. The patient was in her usual good health until four days prior to admission when she developed a papular rash over her chest and back. The papules progressed in size and gradually developed into pustules and vesicles with an erythematous base. These lesions spread over the eyelids, lips, buccal mucosa, tongue and the soft and hard palate. Soon the vesicles involved the entire body. The mucous membranes of the external genitalia became inflamed and several bullous lesions appeared and onset of dysuria was noted. Her eyes became progressively swollen and at the time of admission were swollen shut and sealed with purulent exudate. She was unable to maintain adequate fluid intake because of the painful oral lesions.

Past medical history was non-contributory except for her mother's statement that in the past the patient had developed a rash after ingestion of certain foods (the nature of which she could not further clarify). She had taken no drugs or tonics. Her mother had a history of an erythematous skin rash after ingestion of halibut and suffered mildly from seasonal pollenosis.

Physical examination revealed her blood pressure to be 96/50, respiration 16/minute, rectal temperature 101.6 degrees and pulse 92. Her weight was 17.7 kilograms. She was an acutely ill, thin, white child with a "massively pigmented" skin rash on her face, chest, back and extermities. The lesions of the chest and back were flat, confluent and reddish-brown in color. The lesions of the extremities were more discrete and papular. The scalp was minimally involved. There was a moderate amount of purulent discharge from both closed eyes. Examination of the ears revealed bilateral otitis media. There was a marked rhinitis. The lips were dry, swollen, bleeding and were covered with numerous white vesicular and bullous lesions. Most of the buccal mucosa was covered with a shaggy, white pseudomembrane of necrotic tissue. There was minimal, generalized lymphadenopathy. Examination of the lungs and heart proved unremarkable. The abdomen was flat, no masses or areas of tenderness were noted. The peri-urethral area was inflamed and there were areas of ulceration over the adjacent mucous membranes. The perianal area was uninvolved. A diagnosis of Stevens-Johnson syndrome was considered the most likely probability.

Admission laboratory work included hemoglobin 12.2 gm. per cent, white blood count of 6,600 with 68 per cent polymorphonuclear cells, 28 per cent lymphocytes and 4 per cent monocytes. Sedimentation rate was 48 mm./hour. Urinalysis revealed a specific gravity of 1.029, no sugar or albumin; one to two red blood cells and four to five white blood cells per high power field were noted. Serology was negative. Carbon Dioxide 18 meq/l, chloride 106 meq/l, blood urea nitrogen 10 mg. per cent also reported. The albumin/globulin ratio was 4.6/1.7. Cultures of the mouth grew Gram-positive cocci in chains characteristic of alpha streptococci or pneumococci. There were a few colonies of coagulase positive hemolytic Staphylococcus aureus. Cultures of eye discharge grew no predominant organisms.

The patient was treated with conservative measures consisting of intravenous fluids, intramuscular penicillin, and saline packs to the eyes. Later, oxytetracycline and hydrocortisone ointment was applied to the eyes. Over the next few days her condition improved markedly with this basically supportive therapy. By September 18, 1956, the eye involvement was all but gone. By September 20, there was diffuse scaling of the skin in all affected areas which appeared to be healing well. A rather diffuse depigmentation was noted in all areas of healing. She was discharged on September 29, asymptomatic.

Further laboratory reports revealed two mononuclear cells/cu. mm. and 16 mg. per cent protein in the

cerebrospinal fluid. Scarification of a rabbit's cornea with vesicular fluid failed to identify the organism as herpes simplex. A skin biopsy revealed "scattered ballooned cells having eosinophilic masses in the cytoplasm suggesting degeneration secondary to virus infection." Several blood cultures were reported as negative. Chest x-ray was normal.

Attempts at isolating a HeLa cell cytotoxic agent were unsuccessful.

Comment

Although in Case 1, autopsy was not performed and the exact cause of death not ascertained, the terminal symptomatology is very suggestive of steroid complications. The patient was doing very well and ACTH was being withdrawn. During the last few days of life she developed a leukocytosis with increase in polymorphonuclear cells out of proportion to the usual increase expected in steroid therapy. This finding, in conjunction with the known Pseudomonas and Proteus urinary tract infections, makes septicemia a definite possibility. The history of abdominal pain, anorexia, and terminal coffee ground emesis also make gastrointestinal bleeding a likely source of difficulty.

It is not beyond the realm of possibility that this patient died of acute adrenal insufficiency secondary to withdrawal of ACTH after a substantial period of therapy. The terminal seizures could also be ascribed to steroids. Whether the high fever was due to central nervous system damage, septicemia or adrenal insufficiency is open to speculation. Certainly this type of demise is not unusual in patients treated with potent doses of cortisone or ACTH.

Conclusion

There is still question as to the relative place of ACTH and cortisone therapy in Stevens-Johnson syndrome. The two cases presented neither demonstrate their value nor detract from their potential usefulness in patients with this disease-picture.

Whether the mechanism of the benefit obtained from ACTH or steroids is related to anti-inflammatory and/or anti-hypersensitivity phenomenon, or indeed if the reported beneficial action is merely a "generalized tonic effect"[5,12] is not pertinent to this discussion.

Nevertheless, mild and moderate forms of Stevens-Johnson syndrome can be treated without ACTH or corticosteroids. The plea for caution and intelligent evaluation of the severity of the individual disease-process versus possible consequences of steroid calamity cannot be made too strongly.

Summary

A short background of Stevens-Johnson syndrome with pertinent diagnostic features is presented. A case of Stevens-Johnson syndrome which ended fatally (presumably due to complications of ACTH therapy) and a moderately severe case, conservatively treated, are reported. The plea for cautious use of ACTH and corticosteroids in Stevens-Johnson syndrome is made.

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Special Article

The Proper Role of Health Insurance in the Doctor-Patient Relationship

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TWO PRIME causes demand that the medical profession and the insurance industry gain a mutual understanding today. We both want to preserve the voluntary approach to health insurance; we both want to maintain the confidential doctor-patient relationship with its inherent free choice of physician. These, I believe, can best be accomplished through meetings and discussions at the grass roots level between the practicing physicians, and people in the insurance business.

The solutions to the problems of the accident and health insurance industry depend upon the providers of medical care. We have a common problem and objective—that of bringing adequate and ever improving medical care to the American public. Neither can succeed alone. Neither can survive as free institutions without the other. It is therefore the responsibility of the insurance industry to make sources of insurance information more readily available to the providers of medical care. Then the physicians can understand the insurance process and reasoning, its approach to problems, its accomplishments and goals. It was for this primary purpose and for more effectively meeting the challenge of our common objective that the Health Insurance Council was formed eleven years ago.

The Health Insurance Council is made up of eight insurance trade associations—organizations whose members are either companies or interested specialists, such as medical directors of the companies. In this way, life companies, straight health and accident companies, and casualty companies are brought together so that the Council can speak for a majority in the business. Together, the companies represented provide about 90 per cent of all the health protection provided by such concerns in the country. This does not include the coverage provided by Blue Cross, Blue Shield and similar agencies.

Many physicians know the Council as the chief source of information regarding the extent of voluntary health insurance coverage in the United States. Annually, since 1947, it has gathered and published all available data on the number of persons covered by the various forms of accident and health insurance in the United States.

Nearly everyone agrees that, if they desire, people ought to be protected (or should be able to protect themselves) against the serious financial losses of sickness and injury. Admittedly, there are differing opinions as to how this protection should be provided. However, I think that a majority of the people agree that the voluntary way in health insurance is generally the best way.

Still, we should not overlook the fact that there is an articulate minority which is hardly bashful about urging that another method—a compulsory method—be tried. Thus, it would seem that those of us who hope to see voluntary health insurance succeed should promote the idea and do whatever else is required to achieve that aim. The consequence of neglecting to do so, it seems evident, will be felt far beyond the field of health insurance alone.

One thing we can do and should do is work together. To help achieve closer co-operation and greater understanding between the medical profession and those of us who provide protection against the costs of such care—that is the basic aim of the Health Insurance Council. Through understanding we hope to learn about your insurance problems and then work out satisfactory solutions.

I am sure most people are aware of the magnificent service doctors and hospital personnel have rendered and are rendering to the people of our country. Even those who criticize doctors

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Briefed from a talk presented before the Hennepin County Medical Society, Minneapolis, Minnesota, October 7, 1957. Mr. Crosby was speaking as a representative of The Health Insurance Council.

and others in the medical care field are usually quick to praise their work. Medical services are so valued, in fact, that these critics insist everyone ought to have all he needs—or more—free of charge, of course. As I suggested earlier, we all agree that voluntary health insurance is the answer to the medical care cost problem, and, thus, we believe nearly everyone should have this type of protection; it is needed, and it will continue to expand. Of course health insurance has created some difficulties for you. These must be and are being eliminated so far as possible.

The functions of the *Uniform Forms Committee* probably interests you more than any other Council business. This committee was formed to combat your greatest enigma—the great number of forms that the insurance industry requires you to fill out. From their work, standard approved and acceptable forms have been developed and are being used by a large majority of the companies. In place of a different form being used by each company for the same purpose you will now find more and more that all companies will be using basically the same form. Information sought will be in the same sequence of questions and with uniform wording so that they may be completed more quickly and easily.

Infrequent, unusual or complicated claim cases may require additional information for the proper settlement of the claim. It is the desire of the insurance company to pay all just claims as promptly as possible once they are incurred. The sooner they are paid the sooner the patient is in a position to pay you for your services and the insurance has served the purpose for which it was designed.

The *Medical Relations Committee* is responsible for learning of your problems in connection with insurance. It then initiates steps for their solution by arranging for discussions of them and the establishment of project committees if necessary to work out the problem. These committees are primarily involved in achieving that better understanding between the medical profession and the insurance industry that I spoke of earlier.

The *Hospital Relations Committee* is in a similar role with regard to hospital administrators and other personnel. One of their largest projects has been the establishment of various hospital admissions plans throughout the country. With this the hospital is promptly informed as to the patient's extent of coverage. This simplifies admission through the establishment of credit.

Some metropolitan areas have a card system whereby each hospital has a record of the benefits in the several group insurance plans in force throughout the area. The hospital has a contact with the employer to verify that the individual is covered. Elsewhere a form originated by the employer establishes the extent of the individual's benefits. It provides for an assignment of benefits to the hospital and includes a claim form. This form is almost universally used by insurance companies today. In other metropolitan areas systems are in force or are being developed for prompt verifications of individual accident and health coverage, but their use is nowhere near as widespread.

The *Technical Advisory Committee* deals with the technical aspects of problems in the industry and those referred to them by the other committees. Recent or current studies of this group include a pilot study of over-insurance, hospital outpatient care survey, and a study of relative value unit schedules.

The *Information and Publications Committee* is responsible for making insurance statistics and other information available to the public. Various pamphlets have been furnished you explaining insurance so that you can better understand it and be in a better position to discuss with or advise your patients when necessary.

Let me point out some of the statistics published by this committee as gathered from all available sources. As of the end of 1956, just under 116,000,000 people were insured against hospital expenses out of a population of about 170,000,000. Of course there are large segments of the population, such as the indigent and medically indigent, for whom the insurance principle is not applicable. Therefore the optimum number covered is rapidly being approached. This represents a solid endorsement by the American public of the principle of voluntary insurance it seems. In contrast to the 12,000,000 covered for these benefits in 1940, the rate of growth is truly amazing.

At the end of 1956, 101,000,000 were covered for surgical expense benefits. This compares with about 7,000,000 in 1940. Of these numbers over 50 per cent are protected by policies issued by

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insurance companies, nearly 50 per cent by Blue Cross, Blue Shield and medical-society-sponsored plans, and under 5,000,000 by independent plans.

As to other types of benefits about 65,000,000 are insured against the expense of medical visits and 22,000,000 for loss of income. The newest and most rapidly growing type of health insurance—major medical or catastrophe medical including the broad spectrum of medical expenses—covered 8,800,000 at the end of 1956. This type of coverage is only about six years old but to my mind will be predominant within the next decade. The combined benefits paid by these plans in 1956 totaled $3,600,000,000. It is estimated that the total payments in 1957 will be $4,200,000,000. The number insured at the end of 1957 are estimated to be 123,000,000 for hospital benefits, 109,000,000 for surgical, 74,000,000 medical, 13,000,000 major medical and 43,000,000 for loss of time.

Statistics are cold things and even though they tell a story, a far more interesting story lies in the things that go to make them up. The health insurance story is a fascinating one dating back to the ancient Chinese who paid certain persons claiming particular skills or powers to keep them well. These purveyors, of course, paid with their lives if the customer died. As medical science progresses, the art of medicine or medical practice will probably turn from the curative to the preventive with greater assurance of fulfillment than that of the ancient Chinese.

The code of Hammurabi contained a surgical schedule setting forth the procedures and establishing the fees as well as the penalties for failure, of course. Oscar Ewing and company proposed something similar, though dressed up in modern day trappings. Some of his followers are still striving to achieve their ends by any means. We must be ever watchful of their efforts, and we must progress the voluntary approach to medicine if we are to preserve the freedom of the individual which we prize so highly as Americans.

Since accident and health insurance deals so closely with the medical profession, we in the insurance industry have perhaps been too prone to assume that you are intimately familiar with the insurance process. Actually you have probably never had time to learn about it. Until recently you have probably not had any interest in learning about it. I have discovered that my personal physician and physician-friends aren't familiar with my business. Let me give a capsule description of the insurance mechanism.

Insurance is the pooling together of funds of foresighted individuals against possible financial contingencies and payment of funds from that pool when persons within the group are stricken by the hazard. To assure the success of this mechanism, the cost of the insurance must be kept within the reach of the buying public. In this connection, it is important to realize that insurance neither multiples dollars nor reduces aggregate costs. The presence of insurance should not be regarded as increasing the public's ability to pay. Rather it is a convenient method of spreading costs among self-supporting individuals. Any aggregate increase in costs for the whole insured population will merely be reflected in increased premium rates.

One of the reasons for developing all forms of health insurance was to remove the fear of the financial consequences of a serious illness and thus encourage the prospective patient to seek early preventive care. The attainment of this objective is not meant to deny physicians (and other providers of services in the health field) a normal up-grading of income along with the rest of the population in inflationary times. Rather, it is an expression of confidence, based on past experience, that fees and charges will not rise just because of the presence of insurance.

One point that should be recognized here is that insurance companies do not attempt to set fees for medical services by establishing indemnities in their policies payable for those services when performed. Nor do we represent such indemnities as being equivalent to your fees. We recognize and solidly support the principle that your fee is established by agreement between you and your patient.

Insurance premium rates are established by measuring the frequency of occurrence of the hazards insured against and priced based on the amount of indemnity payable in the event of such hazard. The frequency of occurrence will vary by classes of insureds. The amounts of indemnity purchased will vary by the insured's ability to pay and by the financial standard of living in his community or area. For example, hospital charges for semi-private room accommodations are notably higher on the West Coast than in the South and in urban centers in contrast to rural communities. Therefore amounts of indem-

nity purchased vary by the expected charges to be incurred.

An example of the variance in rates based on frequency of occurrence is found in tonsillectomies. They are more frequent for children than adults. Conversely, appendectomics are morc frequent in the older of the two groups. Recognizing that charges for appendectomies are normally higher, amounts of indemnity purchased arc proportionately higher. Yet they may not coincide with nor in some instances closely approximate the difference in levels of charges within a given area. It would be most beneficial to the public and the costs of medical services could be more adequately insured against if relative value unit schedules could be adopted by the medical profession and unit values established by community.

Types of accident and health insurance fall basically into two categories: group insurance and individual insurance. Group insurance is provided by a master policy issued to cover a number of people who are grouped together for some purpose other than to buy insurance. The policy may be issued to an employer, a labor union, a labor trusteeship or an association. The employes or members are insured under the policy as long as they retain the relationship which forms the basis of the group. An individual policy, as the name implies, is issued to an individual to cover only himself, or in some instances, himself and family. It can be easily seen that in selling individual policies there is not the broad coverage spread as under a group policy. This results in a number of differences between the two types of policies.

Group insurance covers everyone regardless of health conditions. Normally, there is no pre-existent disease restriction. In the case of individual coverage, benefits resulting from pre-existent conditions must be limited or everyone with a bad heart, liver, and other ailments would purchase an individual policy just prior to his treatment or operation. In other words (or in insurance terminology) the individual policy must be more carefully or rigidly underwritten and generally requires satisfactory evidence of insurability or may even be ridered to exclude certain specific conditions, normally pre-existent. Group insurance can offer similar coverage at less cost because there is less expense involved in writing the policy and the element of adverse selection is not as important a part in the purchasing of the policy.

Broadly speaking, there are four kinds of policies sold by accident and health-writing insurance companies: (1) those which provide accident and sickness weekly benefits, (2) those which provide benefits in the event of hospital confinement, (3) those which provide benefits for medical or surgical care and (4) those providing benefits for the broad spectrum of medical services and care, known as "major medical" or, as one type is referred to, "comprehensive" or "multi-medical." Some few companies will write only one of the above but all are available from some company to almost every citizen.

Accident and sickness weekly benefits is the basic accident and health insurance policy with respect to wage earners. It meets the first need in event of disabling accident or sickness, that is, partial replacement of lost income. It is by far the oldest type, some forms of it dating back to the late nineteenth century. This kind of policy most closely reflects the primary purpose of accident and health insurance—protection of the insured's income and finances. To my mind, this is the first kind of policy that should be provided in any program for wage earners.

Typical hospital benefit policies provide specific amounts of indemnity for a specified number of days of hospital confinement against hospital charges for room and board. Additional benefits, called "miscellaneous benefits," generally stated as a multiple of the daily board and room benefit, are provided for ancillary services of the hospital and emergency outpatient treatment in the event of accident.

Surgical policies normally contain a schedule of maximum indemnities payable for specified surgical procedures with an over-all maximum for any one disability. Various levels of benefits are provided in these schedules, in other words over-all maxima of $200, $300, $400, or the like, with the amounts provided for specified procedures graded accordingly.

Medical benefit policies provide specified amounts for doctor visits at home, in the office and at the hospital. The most common type pays only for visits in the hospital, generally not in connection with surgery, and are written in combination with a hospital benefits policy.

Other types of policies provide scheduled or non-scheduled benefits to a specified maximum for diagnostic x-ray and laboratory procedures. Other

policies provide benefits in lieu of or in excess of basic benefits in the event of poliomyelitis. Others provide additional and broader benefits in the event of accident.

The newest kind of policy, major medical, covers the broad scope of medical charges including nursing services, prescription drugs, and appliances in addition to the usual benefits for hospital, surgery and the like. They are of the non-scheduled variety and provide much higher overall maximum benefits per disability or per individual. Limits are $5,000, $10,000, or higher and are designed primarily to cover the financially catastrophic illness. They are of two basic types. One is written with basic, specified benefits plans which pays after the basic benefits plus a deductible, known as a corridor deductible, have been used up. The other type has an initial deductible, that is, the amount of initial charges that the insured is required to pay himself. It is similar to the deductible on automobile insurance. The policy then pays a specified percentage of all reasonable charges above this level up to the maximum provided. The usual percentages are 75 per cent or 80 per cent and deductibles range from $25 upwards. The deductibles are for the purpose of eliminating the high frequency, small amount claims which are expensive to administer and add greatly to the cost of the insurance and can more cheaply be budgeted for by the insured. The co-insurance provision is to have the insured retain a direct financial interest in the charges incurred, thereby discouraging overuse or abuse. Hospital benefits are generally geared to the semi-private level of charges.

Disabilities covered by workmen's compensation and similar laws, care in veteran's hospitals and charges that the insured is not otherwise required to pay are excluded to prevent duplication of coverage or over-insurance so that the policy may not be used to make a profit.

I believe it is clear from the above that the basic purpose of insurance is to protect the insured's finances in the event of accident or sickness. We do not become involved in the providing of medical care, only in the financing of it. It is solely the doctor's province to determine what services are needed in his patient's best interest. The confidential doctor-patient relationship and the principle of free choice of physician are retained. The doctor and patient agree upon the fee to be charged and the services to be performed and we serve only in a financing capacity to the insured. That, to my mind, is the proper role of insurance in the doctor-patient relationship.

Blue Cross, Blue Shield, and similar agencies take a somewhat different approach to this financing, that is, the service approach. Rather than providing indemnities they agree to see that certain services are provided and then contract with the hospitals and doctors for the providing of those services. We have marked differences stemming from our difference in approach and, at times, have violent disagreements being in direct competition with each other. At the same time, we have mutual respect for each other and I believe we both agree that our continued co-existence and growth is in the best interest of the American public. It is because we both have the same purpose and goal—that of providing adequate financing for the betterment of the health of the nation.

What are the further expected developments in the medical-insurance field? Despite the rapid advances over the past decade in the number of people protected against the costs of medical care, there are still large segments of the population not so protected. These can be broken down into four general categories, recognizing that they overlap in various degrees. They are: the indigent, the medically indigent, our rapidly growing older age population and our rural population.

Considering each separately, I believe the indigent should look to the state for medical care as they do for the other essentials of life. They are not insurable, for insurance exists for the protection of an individual's income and finances. Here, there is nothing to insure for they have no income or finances. As Mr. John Miller, past chairman of the Health Insurance Council and vice president of the Monarch Life Insurance Company, so well put it before the Senate committee investigating the possibilities for the expansion of health insurance: "Reinsurance does not make an uninsurable risk insurable."

As to the medically indigent, they can perhaps be insured to a small degree if they are employed. As I noted earlier, the amount of insurance available for an individual, varies directly with his ability to pay. For the most part, I believe they can best be provided for through existing social agencies as they are today.

Adequately protecting the rapidly growing older age population is one of the most vital problems

facing us today. The frequency and amount of such care needed by this group is far greater than that of younger adults and those more actively employed. Therefore, the cost of providing such care is likewise that much greater.

A great deal is being done, judging from reports I read, to care for these people through expanding hospital-controlled home care programs and through improved nursing homes and similar institutions. The biggest problem to the older age person is generally finances. Our rapidly expanding economy and rising cost of living is not helping the situation. Planned retirement income has not kept pace with the economy and this group is the one that has been hurt.

In the insurance industry, we have been working on this problem for the past several years and various approaches have been tried with varying degrees of success. Recognizing that the older age person has less need for large amounts of life insurance, some plans have diverted part of the benefits payable in the event of death to payment in the event of illness. These plans retain only an essential death benefit, recognizing that the other benefits would otherwise go only to the benefit of the younger living.

Other approaches have employed the principle of pre-funding. This offers considerable advantage, but is complicated by difficulties of administration. As our experience develops regarding the known frequencies, duration, and costs of illness in the older ages we can more accurately price this protection and give more stability and permanence to it.

Many companies are now offering what is known as non-cancelable and guaranteed renewable individual accident and health insurance. Some group plans provide for the continuance of protection on retired employes. The extent, however, to which industry as a whole can continue to finance the cost of insuring their retirees is limited. Both the insurance industry and the medical profession must continue to work on this problem together toward a more satisfactory solution. Your marked achievement in the prolonging of healthy, useful lives merits the highest commendation. We must now face the problem of making those lives happy lives, free from the pressing financial care that mars some of them today.

Individual protection is available to our rural population now but the marketing of it presents a difficulty in that the costs of such marketing are not adequately supported by the resultant sales. Improved transportation facilities are making urban medical centers more readily available to rural people. The growth of medical facilities in the rural areas makes the need for financing the costs of such care urgent. We hope to develop shortly a group basis or something similar which will make this protection available to the rural population on a low cost basis in line with the lower cost of living typical of these areas.

As to other future developments in the medical insurance field I anticipate a rapid expansion and continuing growth of the major medical or comprehensive medical type of insurance. Its rate of growth, broadening of benefits, and reduction of underwriting restrictions depend upon the continued integrity and greater understanding of the coverage by the medical profession. Education of the insurance-buying public to avoid unnecessary or overuse and abuse is also needed. If properly used and understood, it can achieve its goal of providing the broadest possible coverage of medical care costs to the American public at the lowest premium rate.

What will this development mean to the medical profession? It will give you assurance that your insured patients have adequate financial protection against the reasonable costs of whatever medical care you deem advisable. It will remove concern for the limiting factor of financing in prescribing for their needs.

The very fact that I was invited to present these views indicates that the medical profession and insurance business are gaining in understanding each others problems. The medical profession is to be congratulated for having set in this country a world standard for medical care. Yet, with this continued close co-operation between medicine and insurance, I feel we can achieve a standard of medical care beyond our fondest dreams today. That is our common goal.

Medical Progress

Chemotherapy of Leukemia

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THE PAST ten years have seen the development of several new drugs which improve considerably the outlook for management of the leukemic disorders. Although none has yet been found which will produce cures, there has been improvement in survival times in acute leukemia and in both acute and chronic forms it has been possible to make survival periods much more comfortable.

Leukemia is among the malignancies which appear to be increasing in frequency. There is considerable evidence to suggest that this is world wide in scope and apparently largely due to a higher incidence in older age groups. Increased recognition of cases no doubt accounts for some of this, but, as in the case of lung cancer, the increase is more than can be accounted for solely by such factors. The reason for this is not clearly due to obvious factors such as exists in the relationship between smoking and lung cancer. What effect increasing radiation exposures may have is a moot question.

Because leukemia is a disease which is becoming more frequent and because we now have drugs which make possible improved treatment, it is even more important to differentiate the various types of the disease. Recently published studies of MacMahon and Clarke indicate that the commonest type of acute leukemia is myelogenous, whereas in chronic leukemia the lymphatic type is more frequent.[1] We sometimes think that acute leukemia is a disease of youngsters but acute forms are by no means confined to youth. Actually there is a higher incidence of acute myelogenous leukemia in the older adult group than there is in children. The data of MacMahon and Clarke indicate a higher incidence of acute myelogenous leukemia in children than acute lymphatic leukemia, although I am certain that it is the clinical impression of most of us that acute lymphatic leukemia is much commoner in the early ages. The chronic forms of the disease are almost exclusively diseases of middle and later life.

In considering clinical and therapeutic aspects, the importance of proper classification needs emphasis because of the "type-specific" nature of many of the newer drugs. Proper classification requires examination by competent blood morphologists since the choice of treatment will depend largely on the type of disease diagnosed from blood and bone marrow examination. Main emphasis is given in this discussion to myelogenous and lymphatic leukemia since these are more frequently encountered than are monocytic leukemia or leukemic reticuloendotheliosis. Actually, the diagnosis of monocytic leukemia is often a questionable one. Bone marrow study indicates that many of these are actually myclogenous in type but have numerous monocytoid cells in the peripheral blood or marrow.

Acute and Sub-Acute Leukemia

Acute and sub-acute leukemia are considered together since treatment of these two types of the disease is similar. Differences in clinical manifestations are usually ones of degree of severity. Leukemic reticuloendotheliosis is generally "acute" from the standpoint of cell morphology but usually runs a sub-acute clinical course. The developmental pattern may be primarily towards granulocytes, in which case it is described as leukemic reticuloendotheliosis of myelogenous type. Where development is to cells of the lymphatic series, it is described as reticuloendotheliosis of lymphatic type. The developmental pattern may be mixed When the morphologic diagnosis is established, treatment can be planned intelligently.

Treatment.—The availability of new drugs for the treatment of acute leukemia make it important to consider carefully the problems of total care of the patient. The effect of many of these

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TABLE I. DOSAGE RANGE OF THE FOLIC ACID ANTAGONISTS

Drug	Dosage in mg. Per Day
Aminopterin	0.5-1
Amethopterin	3-5

drugs is a delayed one, and, therefore, blood replacement, maintenance of fluid balance, and antibiotic therapy often make survival possible until the specific drug becomes effective. Since survival statistics have in some cases been improved, treatment must be planned for longer periods of time than was once the case in acute leukemia.

During the development of the drugs now in use, countless thousands of compounds have been tried and of these a few have proved to be effective. Among them are a number of compounds known as antimetabolites, implying interference with certain fundamental metabolic functions of cells. The first to be discussed is the group known as the folic acid antagonists.

The Folic Acid Antagonists.—Investigation of this group of compounds began prior to 1947 when it was found that feeding a folic acid-like substance to certain laboratory animals produced an acute deficiency syndrome and at the same time a fall of the white blood count to low levels. This suggested its use in blood dyscrasias, and as a consequence many folic acid analogues were studied. The commonest of these now in use are aminopterin, reported by Seegers et al. in 1947, and amethopterin.

The basis for the action of these drugs is the principle of biologic competition of structurally-related compounds. That is, by competing with a normal growth factor, in this case folic acid, they effectively block the normal metabolic function of that factor and interfere with cellular growth and reproduction. They are not completely selective so far as the malignant cells are concerned but appear to have a greater effect on rapidly metabolizing leukemic cells than on normal cells. There seems to be no real advantage of one of these drugs over another since comparable effects can be achieved dose for dose.

The folic acid antagonists are not without danger since they do affect normal cells and often produce striking toxic effects when given in full therapeutic dosage. Milder toxic symptoms include stomatitis, alopecia, pharyngitis and diarrhea. Hypoplasia or aplasia of the marrow and serious gastrointestinal hemorrhage sometimes occur and these more serious manifestations require prompt cessation of therapy. Frequent blood examinations need to be done to follow the progress of therapy. Depending upon weight, age, size and physical condition of the patient, the general accepted dosage ranges for initial therapy are indicated in Table I.

TABLE II. RESULTS OF TREATMENT OF ACUTE LEUKEMIA

With Folic Acid Antagonists

Author	No. of Cases	Percent Remissions	
		Acute Lymphatic	Acute Myelogenous
Fessas	97 (collected from the literature)	45	27
Dameshek	32	43	27

Oral dosage is as effective as parenteral and is the preferred method of administration. Set patterns of therapy cannot be outlined, since this depends on many factors such as the white count, the physical condition of the patient, and the occurrence of toxic symptoms. The duration of therapy also depends on such factors, and the question of whether to use interrupted or continuous therapy is not entirely settled. Farber advocated continuing therapy through remissions, but Burchenal believes that treatment should be interrupted once remission has been achieved. At any rate, one should try to continue treatment until remission occurs as indicated by subjective improvement and return to normal or near-normal status of the blood and marrow. Sometimes relatively long remissions can be achieved, and, because of this and the likelihood of toxic reactions, it is probably better to treat on an interrupted schedule.

The first temporary remissions in acute leukemia in children treated with aminopterin were reported by Farber in 1948.[2] Dameshek reported a group composed largely of adults at about that same time.[3] It has become apparent since then that the folic acid antagonists are much more effective in the treatment of acute leukemia in children than in adults. Just how effective the folic acid antagonists are in acute leukemia is seen in Table II.

It is obvious from this that the folic acid antagonists are more effective in acute lymphatic

TABLE III. MEDIAN (50 PERCENT) AND 10 PERCENT SURVIVAL TIME IN ACUTE LEUKEMIA

Untreated and Treated with Folic Acid Antagonists

Cases and Type of Treatment	Time in Months 50 Percent Survival	Time in Months 10 Percent Survival
143 cases collected from literature untreated (Haut)	4½	11
160 cases collected from literature treated with F.A.A. alone (Haut)	4	9½
337 cases treated mainly with F.A.A. (a few + hormones) (Farber)	7	16

TABLE IV. RESULTS OF TREATMENT OF ACUTE LEUKEMIA

With ACTH and Cortisone

	Percent of Complete Remissions		
	Acute Myelogenous	Acute Lymphatic	Acute Monocytic
425 cases collected from literature			
All cases	5.5	27.3	
Children only	25.0	50.0	
Fessas et al			
47 cases	0.	68.	0.
10 or younger only	0.	81.0	0.

than in acute myelogenous leukemia. Series which report results of treatment of adults with folic acid antagonists indicate improvement rates of only 2.6 per cent up to 10 to 15 per cent.

The question of whether significant increases in life span occur as a result of treatment with the folic acid antagonists, is somewhat harder to determine. In Table III, Haut's figures suggest that there is no significant increase in survival time beyond that of cases who had no specific drug treatment.[6] Farber's data, on the other hand, seem to show rather clearly an increase in median survival time (time at which 50 per cent remain alive) and 10 per cent survival time (the time at which 10 per cent remain alive).[7]

Even though we cannot finally answer the question of whether the folic acid antagonists increase survival times in acute leukemia, it is nevertheless quite clear that they have real value from the standpoint of improving general well-being. In some this may be only for relatively short periods of time, but in appreciable numbers of cases they induce complete or partial remissions of considerable duration.

ACTH and the Corticosteroids.—In the historical sequence, the next drugs to be used in the treatment of acute leukemia were the hormones ACTH and the adrenal corticosteroids. The use of these compounds in leukemia was first suggested by investigations of Dougherty and White who noted that the administration of ACTH caused a depression of circulating lymphocytes and certain distinctive changes in lymphoid tissues.[8] Shortly after this, in studies of transplantation of leukemia in rats, it was found that the adrenal cortical steroids exerted a protective effect against transplantation whereas adrenalectomy tended to increase the susceptibility of rats to transplanted leukemic tissue.[9] Such studies led to the use of these compounds in both chronic and acute leukemias, but their usefulness has been found to be greatest in acute forms and particularly in acute lymphatic leukemia.

Dosages vary considerably, but in general 40 to 80 mgs. of ACTH per day and 100 to 300 mgs. of cortisone per day are used. Prednisone and prednisolone have tended to supersede the use of these other compounds primarily because of the advantage of producing less undesirable effects on electrolyte balance. The usual dosage of these compounds is in the range of 30-80 mgs. per day. Hypercorticism can be expected in all cases treated sufficiently long. In some patients with acute leukemia when smaller doses are ineffective or when there has been failure to respond to other drugs, it may be worthwhile to try massive doses of prednisone, up to one gram per day.

The early reports of ACTH and cortisone therapy indicated there was a high immediate remission rate primarily in acute and subacute lymphatic leukemia. The often-times dramatic improvement in anemia, thrombocytopenia, and leukopenia suggests that the effect is myelo-stimulating in contrast to the myelo-depressive effect of the folic acid antagonists. The difference of the effect of the steroids in the treatment of lymphatic compared to myelogenous leukemia is even more striking than it was in the case of the folic acid antagonists. Similarly the results are much better in the treatment of leukemia in children than in adults. In Table IV it is seen that in a large group collected from the literature, only 5.5 per cent of cases of acute myelogenous leukemia had remission, whereas 27.3 per cent of cases of acute lymphatic leukemia experienced remission. When children alone are considered, the results are more impressive, 25 per cent with acute myelogenous leukemia experiencing remission as compared to 50 per cent with acute lymphatic leu-

TABLE V. RESULTS OF TREATMENT OF ACUTE LEUKEMIA

With 6-Mercaptopurine

Number of Cases and Age	Percent		
	Good Remission	Partial Remission	Failure
87 children (Burchenal)	47	18	34
50 adults	14	20	65
24 adults (Hall)	54 ("Initial Remission Rate")		

kemia. The data from the group treated by Fessas bear out even more strikingly the difference in results of treatment of the two types of the disease and the fact that children respond better. His data indicate that good results may be expected in a very high percentage of cases of acute lymphatic leukemia in children and suggest that it is the treatment of choice in this type of the disease.[4]

6-Mercaptopurine.—The other major drug currently in use in the treatment of acute leukemia is another compound which is an antimetabolite, namely 6-mercaptopurine. The purines are precursors of nucleic acids and the development of purine antagonists was again an approach to drug therapy based on the principal of biologic competition of related substances. The hope was that interference with nucleic acid synthesis might affect the growth characteristics of malignant cells. The testing of over a thousand purines and pyrimidines for inhibition of tumor growth finally led to the development of 6-mercaptopurine which inhibited the growth of a variety of experimental tumors. It has by now had extensive clinical application in leukemia.

Like the folic acid antagonists, 6-mercaptopurine (Purinethol) has important toxic effects. These are primarily on blood formation causing leukopenia, anemia and thromobocytopenia. Accordingly frequent counts must be done in following the course of treatment. Unlike the folic acid antagonists, there are no other consistent toxic symptoms, although nausea, vomiting and anorexia may occur. The bone marrow may become hypoplastic but marrow recovery and the disappearance of signs of toxicity usually follow cessation of therapy quite promptly.

The drug is given orally in dosage of 2.5 mgs. per kilogram body weight in single daily doses. On such dosage, the average adult is given from 100-200 mgs. per day and the average child 50-75 mg. per day. Higher doses than this are seldom necessary and increased marrow depression and gastrointestinal toxicity often accompany higher dosage. In general, it is from three to six weeks before 6-mercaptopurine is fully effective and it is often necessary to produce leukopenia before normal cells begin to reappear in the peripheral blood.

The results of treatment of acute leukemia of all types with 6-mercaptopurine are indicated in Table V.

In the group reported by Burchenal, the results seem to be better in children than in adults with 65 per cent of the children showing a good or partial remission. Thirty-four per cent of adults experienced some degree of remission.[10] This is considerably better than the results from the folic acid antagonists, however, where remission rates in adults were only in the range of 2 to 10 per cent. It should be pointed out that in this series a number of children resistant to amethopterin and cortisone subsequently obtained good remission with 6-mercaptopurine. On the other hand, fourteen of thirty-seven children who became resistant to 6-mercaptopurine subsequently responded to treatment with amethopterin. Hall's "initial remission rate" in adults indicates that it is far superior to other drugs in the treatment of acute leukemia in adults. He recommends that 6-mercaptopurine be given to the point of virtually complete suppression of leukemic leukocytes in the marrow and by so treating reports a remission rate of 54 per cent.[11]

Generally speaking, there is no statistically significant increase in overall survival time in adults from the use of 6-mercaptopurine. In individual cases it appears to increase the expected survival time and its effect on symptomatic improvement more than warrants its use even though "improvement time" may be short lived. In the treatment of children, however, it appears that it definitely increases survival time when used alone or in sequential therapy with other drugs. In Table VI it is seen, for instance, that the median (50 per cent) survival time is increased from nine months to 12.4 months. Expressed in another way, adding 6-mercaptopurine to a therapeutic sequence of folic acid antagonists and steroids increases the one year survival percentage from 29 per cent (folic acid antagonists and/or corticosteroids) to 52 per cent (folic acid antagonists, steroids, plus 6-mercaptopurine).[12]

TABLE VI. SURVIVAL TIME IN ACUTE LEUKEMIA

Cases Treated with Folic Acid Antagonists Steroids and 6-Mercaptopurine-Burchenal

No. of Cases and Treatment	Median (50%) Survival Time—Months
154 children—F.A.A. and Steroids	9.
184 children—F.A.A., Steroids and 6 M.P.	12.4
122 adults—F.A.A., Steroids and 6 M.P.	7

The Glutamine Antagonists.—Another group of antimetabolite compounds currently being studied is that known as the glutamine antagonists. These compounds act by interfering with certain fundamental stages in the synthesis of nucleic acid purines in contrast to the action of 6-mercaptopurine which acts by competing with other purines in the process of synthesis of the nucleic acids. The two compounds mainly being studied are azaserine and DON. These have been found to have no practical value when used alone but they are thought to delay the development of resistance to 6-mercaptopurine when used in conjunction with that compound. Trials are under way to determine whether the combination of 6-mercaptopurine and azaserine is better than 6-mercaptopurine alone, but as yet this question has not been answered.

Summary.—In summarizing the results of treatment of acute leukemia, it is apparent that adults are benefited less than children. In considering a choice of drug, the antimetabolites should be the principal drugs used for long-term therapy because remissions induced are in general longer than those induced with the adrenal corticosteroids. The action of the steroids, however, is more rapid than that of the antimetabolites and in acutely ill patients of all age groups, they should be used as initial therapy when a delay in the effect of the antimetabolite might endanger the life of the patient.

In less acutely ill adults, 6-mercaptopurine is the initial drug of choice, since fewer adults respond to folic acid antagonists than to 6-mercaptopurine. Where 6-mercaptopurine fails in adults the folic acid antagonists should be tried since they will occasionally induce remission. In acute lymphatic leukemia in adults, steroids often produce striking symptomatic relief and a combination of steroids and 6-mercaptopurine may well be the most effective treatment.

In children not critically ill, the folic acid antagonists or 6-mercaptopurine should be used initially, the latter being preferred in the myelogenous type. Where resistance to one develops, the other may be used, since cross resistance does not occur. Adrenalcorticosteroids may be used in acute lymphatic leukemia in children and in combination with an antimetabolite or alone, particularly where resistance to the antimetabolite develops, or if response appears to be suboptimal. There appears to be some justification for using massive doses of prednisone in certain desperately ill patients.

TABLE VII. SURVIVAL IN CHRONIC LEUKEMIA

Myelogenous and Lymphatic (Tivey)

Survival Time—Years	Percent
2.65	50.
5	22.
7	10.
10	6.
20	0.8

In leukemic reticuloendotheliosis the choice of drug in general will depend on the direction of differentiation of the reticuloendothelial cells. Cases which develop along myeloid lines should be treated like acute myelogenous leukemia and where the development is primarily lymphatic, should be treated like acute lymphatic leukemia.

Chronic Leukemia

In contrast to acute leukemia which effects young and old alike, the chronic forms are primarily diseases of middle and late life. The course of chronic leukemia is quite different from that of the acute disease. Survival periods vary from a few months up to many years, cases having been reported to survive for as long as twenty-five years. In an analysis of a large number of series reported between the years 1925 and 1951 Tivey found no significant difference in survival prospects for patients with chronic lymphatic as compared to chronic myelogenous leukemia.[13] Table VII from his data show that 50 per cent of patients will be alive 2.65 years after the onset of symptoms and 10 per cent survive for as long as seven years. Some other series suggest that the median survival time is somewhat longer and in the range of three to five years.

Treatment.—Deep x-ray has been standard therapy for chronic leukemia for years and remains an important method of treatment. The question of whether newer drugs will supersede x-ray irradiation cannot be answered at this time. During the past ten to fifteen years numerous

TABLE VIII. RESULTS OF TREATMENT OF CHRONIC MYELOGENOUS LEUKEMIA

With Myleran

Number of Cases	Percent Remissions	Duration
Galton 19	42	6 months to over 21 months
Hyman and Gelhorn 21	81	Up to 48 months

other agents have been used including urethane, P32, the so-called alkylating agents including nitrogen mustard, triethylene melamine (TEM) and the phosphoramides (TEPA, Thio-TEPA). Of these, probably P32 alone will survive as an important method of treatment of leukemia. The others have been of considerable value in investigation and at times for treatment, but the search has gone on for drugs which have greater margins of safety and offer more promising clinical results.

Myleran.—Myleran is the one of these drugs which has proved to be of major importance. Its development grew out of investigations of compounds related to the nitrogen mustards which were known to be of value in the treatment of Hodgkin's disease. In the early studies, myleran showed a striking depressive effect on the myeloid series in both laboratory animals and man. The initial studies of the effect of this compound in chronic myelogenous leukemia in man were reported in 1953 by Galton.[14] Since that time there have been numerous additional reports indicating that myleran is the chemotherapeutic agent of choice in the treatment of this type of leukemia.

The effects of myleran are thought to be due entirely to its ability to depress granulocyte formation in the marrow. Lymphocytes are only slightly affected and generally not significantly. The platelet count is almost always depressed to some degree and must be watched carefully to avoid severe thrombocytopenia. Peculiarly enough, however, an occasional case treated with myleran develops a marked thrombocytosis. Striking clinical improvement may occur in as short a period of time as two weeks and generally speaking, regression of spleen size occurs about as frequently and to the same degree as with irradiation.

The toxic effects of myleran are mostly limited to its effect on the bone marrow so that frequent blood counts are indicated to follow the progress of treatment. In sufficient dosage it may produce aplasia of the marrow and thrombocytopenia must be watched for. A decline in immature granulocytes generally occurs before there is a reduction in mature cells. Response in terms of cell destruction may be so rapid that high levels of uric acid at times develop in the blood leading to renal damage from uric acid blockage of the tubules. Because of this, it is important to maintain a high fluid intake particularly during the initial phase of treatment of cases with very high total white counts. Myleran is not recommended in chronic lymphatic leukemia because of its myelodepressive effect and because it is generally ineffective in this type of the disease. Cases of acute leukemia fail to respond to myleran.

The dosage schedule of myleran varies somewhat depending on the sensitivity of the patient to the drug, but initial dosage of 4 to 6 mgs. per day appears to be generally satisfactory. Some cases prove more resistant and require doses up to as high as 20 mgs. per day to bring the white count to satisfactory levels. Daily dosage should be maintained until the leukocyte count is in the range of 8,000 to 10,000 per cubic mm. and the dosage may have to be revised upwards or downwards, depending upon the patient's response.

The question of maintenance dosage with myleran has not been settled, but in general, interrupted courses of treatment are recommended with recurrence of symptoms and deterioration in the blood picture being the indications for re-treatment. The dosage schedule for re-treatment is the same although larger doses in subsequent courses may be necessary and some fail to respond to re-treatment. Patients who relapse as soon as the drug is stopped are best treated with maintenance dosage in the range of 2 to 4 mgs. per day.

It is too early to compare the survival data of patients treated with myleran with those treated with x-ray or P32. The evidence noted in Table VIII and the opinion of these and other authors, suggest that myleran will be as effective as x-ray or P32.[14,15,16]

Whether myleran will prove superior to irradiation therapy requires longer experience. It has at times proven to be effective in patients refractory to irradiation and should be tried in such cases. In contrast to the more expensive equipment required for x-ray or P32 therapy, it has the advantage of being low in cost. Furthermore, it is a method of treatment easily administered and lacking in the undesirable side effects which often accompany deep x-ray therapy.

Colchicine Derivatives.—Colchicine is known to have an antimitotic effect and two of its derivatives have been used in chronic myelogenous leukemia. One of these, colcemid, has been reported to produce a high percentage of remissions in cases of chronic myelogenous leukemia when given in dosages of 3-10 mgs. per day by mouth. Rapid relapse occurs when this drug is stopped and maintenance therapy is necessary.

Chlorambucil.—Further investigation for effective and safe drugs for the treatment of chronic lymphatic leukemia led to the development of another compound which is related to the nitrogen mustards, namely, chlorambucil. Contrary to myleran, this drug was found to produce spectacular decreases in lymphocytes and was first investigated in a variety of malignant lymphomas including chronic lymphatic leukemia. The results from using chlorambucil in chronic lymphatic leukemia are less impressive than are those with myleran in chronic myelogenous leukemia. The experience has not been as extensive as with myleran but there is less enthusiasm about its use. Most patients feel better and experience some degree of improvement in strength. A fall in white count will occur due primarily to a decrease in the number of lymphocytes. In most, a decrease in granulocytes will also be seen, the degree being related to the size of the dose. This effect is promptly reversed when the drug is discontinued. The effect on platelets is variable, some cases showing no effect and some a serious thrombocytopenia. Cases have been reported in which an initial thrombocytopenia was not appreciably affected by the drug and this should not necessarily exclude its use in such cases.

Toxic effects of chlorambucil, like those of myleran, are entirely confined to the effect it has on the bone marrow. The riskiest patients from this standpoint are those who have hypoplastic marrows from long standing disease or from extensive treatment, and these may develop severe granulocytopenia, anemia and occasionally thromobocytopenia.

The dosage of chlorambucil is .1 to .2 mg. per kilogram of body weight daily, with an initial course of treatment which ranges from four to eight weeks. The smaller dose should be administered to patients whose marrows are very heavily infiltrated with lymphocytes. Treatment should be given as long as there is continuing symptomatic improvement and no trouble from granulocytopenia. The drug should be stopped when the white count is in the range of 8,000 to 10,000 per cubic millimeter and because of the hazard of granulocytopenia, maintenance therapy is not advised. If there is no response after four to five weeks of therapy, treatment should be discontinued.

TABLE IX. RESULTS OF TREATMENT OF CHRONIC LYMPHATIC LEUKEMIA

With Chlorambucil

No. of Cases	Objective Improvement Excellent—Good—Slight or None	Subjective Improvement
18—Ultmann 8—Galton	3 8 9 Some benefit 4 No effect 4	8

In the first reports of treatment of chronic lymphatic leukemia with chlorambucil, Galton noted significant improvement in 50 per cent of the cases.[17] Altman claimed that the drug was effective only while being given and that relapse occurs as soon as it is stopped.[18] Others, however, have noted remissions of from three to six months in patients who responded. The most optimistic report is that of Ultman in Table IX in which about two-thirds of the cases showed good or excellent objective improvement.[19] Further clinical trial and longer experience with chlorambucil is needed before its place in the treatment of chronic lymphatic leukemia can be fully assessed.

Summary.—In summarizing the chemotherapy of chronic leukemia we cannot yet say how the newer drugs will compare in terms of long term results with x-ray or P32. Myleran is the drug of choice for the treatment of chronic myelogenous leukemia and so far appears to be about as effective as irradiation. Chlorambucil is of benefit in an appreciable number of cases of chronic lymphatic leukemia and warrants further trial. The treatment of the form of chronic myelogenous leukemia described as myeloid megakaryocytic hepatosplenomegaly (MMHS), atypical myelosis or agnogenic myeloid metaplasia, has not been discussed, but a combination of prednisone and testosterone appears to be worth trying.

The problem of when to treat chronic leukemia is at times difficult to decide. When symptoms are present there should be no question of justification for treatment. Opinions differ as to whether or not treatment should be offered to relatively asymptomatic patients. Osgood's survival data in chronic leukemia patients treated with regularly-

spaced, "titrated dosage" of radioactive phosphorous suggest that such patients should be treated.[20,21] The future may well prove that regular treatment of all patients with drugs such as myleran will also extend their period of survival.

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COMBINED RENAL AND BILIARY TRACT SURGERY

(Continued from Page 478)

given deep x-ray therapy to the right renal region following discharge from the hospital. Examination five months later revealed a well-healed scar and no evidence of tumor.

Summary

Occasionally, a patient presents surgical disease involving both the biliary tract and right kidney. A planned operation combining both types of surgery through a single abdominal incision can be done without difficulty. Five such cases are reported. The postoperative morbidity was not increased except in one case. Wound healing has been satisfactory.

Case Presentation

Ileus due to Mecamylamine Hydrochloride

Simulating an Acute Surgical Condition of the Abdomen

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EVER SINCE the pharmacologic properties of mecamylamine hydrochloride (Inversine) were first reported by Stone and associates,[1] this potent ganglionic blocking agent has enjoyed increasing popularity in the treatment of hypertension. Mecamylamine is a secondary amine and possesses a powerful inhibitory effect on the transmission of impulses at autonomic ganglia and has an action almost identical to the quaternary ammonium compound, hexamethonium.[2] However, mecamylamine in contrast with other ganglion blocking agents such as hexamethonium and pentolineum (Ansolysen) is almost completely absorbed orally. This allows for a more constant control of blood pressure in that fluctuations in gastrointestinal motility do not cause marked variations in the hypotensive effect. Development of tolerance to mecamylamine is very slight or nonexistent.

All of these agents cause blockade of both sympathetic and parasympathetic pathways and as a result possess the capability of producing constipation which occasionally progresses to ileus, the subject of this report. Other undesirable side effects include dryness of the mouth, visual disturbances, diarrhea, urinary retention, anorexia, nausea and vomiting, fatigue, sedation, paresthesias and orthostatic hypotension. Smirk[3] believes that mecamylamine in therapeutic dosage is more likely to cause unpleasant parasympatholytic side effects than pentolinium.

A recent article by Grant and Boyd[4] reports two cases of mecamylamine ileus both of which were characterized by crampy abdominal pain and distention closely resembling mechanical bowel obstruction. One patient was explored and small bowel distention without an obstructing mechanism was found. The patient died postoperatively. The second patient recovered promptly on nonoperative management. Two somewhat similar cases have recently been seen at the University of Minnesota Hospitals.

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Case Reports

Case 1.—Mr. E. S., U.H. #913753, aged seventy-six, was admitted to the University of Minnesota Hospitals on May 27, 1957, with a tentative diagnosis of a low small bowel obstruction. Approximately three weeks prior to admission here he had been admitted to another hospital for a possible myocardial infarction. He was started on mecamylamine therapy, 2.5 mg. q.i.d. for treatment of hypertension. Ten days prior to admission here he became constipated and was given enemas. Three days later the patient was given intravenous fluid therapy. He had no stools for three days before admission but did pass gas per rectum the day prior to admission. Abdominal pain was prominent but was not particularly cramping in nature. On admission the patient appeared moderately dehydrated and distressed. The blood pressure was 200/100, pulse 76, rectal temperature 100.8 F. The cardiac rhythm was irregular and there were occasional rales at both bases. The abdomen was markedly distended with many visible small bowel loops. Tenderness was not pronounced. Auscultation revealed bowel sounds which were generally hypoactive but with occasional high pitched rushes suggesting possible mechanical obstruction. The hemoglobin was 17.6 gms. per cent, white blood count was 3,400 with 89 per cent neutrophiles and 11 per cent lymphocytes. Blood urea nitrogen was 35 mg. per cent, CO_2 combining power was 18 milliequivalents per liter and chlorides 116 milliequivalents per liter. Electrocardiogram showed atrial fibrillation with no definite evidence of myocardial infarction. Roentgenograms of the abdomen revealed multiple distended loops of small bowel with air-fluid levels and were interpreted as consistent with an obstruction in the lower small bowel (Fig. 1).

A clinical diagnosis of probable Inversine ileus was made but mechanical bowel obstruction was still considered a definite possibility. The patient was given intravenous fluids and placed on nasogastric suction. Barium enema examination was performed and was negative. A Smith long intestinal tube was introduced.

There was a large amount of drainage from the Smith tube and by the third day after admission, the abdomen was only minimally distended. Bowel sounds were hypoactive and without high pitched rushes. On June 1 (the 5th hospital day) contrast media was introduced into the intestine via the Smith tube and the radiologic interpretation was that of a possible ileus but still most suggestive of a mechanical obstruction. By June 3, 1957 (7 days after admission) the clinical course seemed definitely that of an ileus and not of a mechanical obstruction, so the patient was started on Urecholine 5 mg. q.i.d. The patient soon passed gas per rectum and the intestinal tubes were subsequently removed and recovery was prompt.

Comment.—This patient presented a persistent radiologic picture of mechanical small bowel obstruction as well as physical findings suggestive of late mechanical obstruction. Hence, in spite of a history of mecamylamine therapy, the situation was not entirely clear until there was partial decompression by use of a long intestinal tube and a good therapeutic response to Urecholine.

Case 2.—Mr. T. B., U.H. #703373, aged fifty-six, was admitted to the University of Minnesota Hospital on August 5, 1957, with a six-hour history of crampy abdominal pain, vomiting, and distention. Past history revealed a subtotal gastric resection with Billroth II reconstruction in 1941 for a duodenal ulcer. For the last two and one-half years he had been receiving various medications for hypertension including Serpasil, Apresoline, and Ansolysen. In April, 1957, mecamylamine 2.5 mg. b.i.d. was started and the dose gradually increased up to 30 mg. a day. For one month prior to admission the patient had been having two or three watery stools each morning. On admission his blood pressure was 260/110, pulse 68, respirations 18 and oral temperature 98.6° F. The abdomen was moderately distended and tense with increased guarding in both upper quadrants and in the right lower quadrant. There was no well localized tenderness or rebound. Bowel sounds were hypoactive. Rectal examination was negative. The hemoglobin was 14.1 gms. per cent, white blood count was 14,300 with 87 per cent neutrophils, 11 per cent lymphocytes and 2 per cent monocytes. Urine showed 1+ albumin and the blood urea nitrogen was 33 milligrams per cent, serum amylase 73 Somogyi units per cent, carbon dioxide combining power 24 milliequivalents per liter and serum chloride 108 milliequivalents per liter. Roentgenograms of the abdomen revealed distended loops of small bowel with air-fluid levels (Fig. 2). The differential diagnosis included bowel obstruction, cholecystitis, appendicitis, and perforated ulcer as well as drug ileus. Intravenous fluids were started and naso-gastric suction was instituted. Several hours after admission the patient spontaneously passed gas and stool per rectum. The cramping pains rapidly subsided and recovery was complete over the next few days. This patient has subsequently had bilateral thoraco-lumbar sympathectomies performed owing to the failure of medical management in controlling the hypertension and to his intolerance of drug therapy.

Comment.—This patient had a watery diarrhea as the main side effect of his mecamylamine therapy. Diarrhea as a prominent side effect has been described in other reports.[2,5] However, at the time of his acute episode, he had a rapid onset of cramping abdominal pain and presented with several clinical findings suggestive of an acute surgical abdomen. The prompt subsidence of symptoms along with the history of mecamylamine therapy obviated any further difficulty in the differential diagnosis.

Discussion

Constipation is a common side effect of the ganglionic blocking agents including mecamylamine. Ileus is less frequent but may be of serious consequence because of its similarity to mechanical obstruction. Smirk and McQueen[3] report constipation and abdominal distention in fourteen patients and "partial ileus" in one patient in a series of forty patients treated with mecamylamine. Fries and Wilson[5] report constipation in thirty-two of thirty-six patients receiving mecamylamine therapy. It was necessary to stop the medication in four patients owing to distention and vomiting with obstipation or small liquid stools. Concomitant administration of neostigmine or some type of laxative is frequently recommended.

Most of the reports in the literature of more serious gastrointestinal disturbances presenting as surgical emergencies have involved the older ganglion blocking agents such as hexamethonium. Bourne and Hosford[6] in 1951 reported an abdominal exploration of a patient with obstructive symptoms who had been treated with hexamethonium. The small bowel was red, edematous and distended but there was no mechanical obstruction. The patient recovered. MacKey and Shaw[7] in 1951 reported a death attributed to paralytic ileus secondary to hexamethonium in a patient in whom non-operative treatment was carried out. Postmortem examination revealed a distended edematous small bowel. In 1952 Goldstone[8] reported a death forty-eight hours postoperatively after exploration of a patient with pentamethonium ileus. McCalla, Creech, and Ford[9] in 1953 reported two cases of hexamethonium ileus. One patient was

explored for a possible acute appendicitis and died eighteen days later. The second patient was managed by intestinal intubation and promptly recovered. The two cases of mecamylamine ileus



Fig. 1. Flat and upright films of abdomen of Case 1 taken on admission after a history of progressive obstruction over ten days (see text).

Fig. 2. Upright and flat films of abdomen of Case 2 taken on admission after a six-hour history of severe cramping abdominal pain (see text).

with one fatality reported by Grant and Boyd[4] have been noted above. Ganglion blocking agents have also been used in the treatment of preeclampsia and essential hypertension in pregnancy with resultant paralytic ileus and death in the newborn.[10,11]

These drugs apparently by virtue of their ability to block both sympathetic and parasympathetic pathways, exhibit a variety of effects on the gastrointestinal tract. Recorded side effects vary from watery diarrhea to obstipation. More severe forms frequently have the characteristics of adynamic ileus but at times manifest as a type of spastic ileus and closely simulate mechanical bowel obstruction. In addition, simulation of a localized intra-abdominal inflammatory process has been recorded by McCalla and associates[9] and was suggested in *Case 2* of this report. Wangensteen[12] has commented on the difficulty that may occur on occasion in the differentiation of mechanical, spastic and inhibitive (paralytic) ileus. In his experience the most frequent type of spastic ileus

involves the colon. The recorded observations at operation and autopsy as well as the roentgen finding in the non-operated cases of ileus due to glangion blocking agents have revealed the pathology to be almost exclusively limited to the small bowel.

Summary and Conclusions

1. Two cases of ileus due to mecamylamine hydrochloride (Inversine) that presented as possible surgical emergencies are reported.

2. Clinically these patients appear to manifest characteristics of both inhibition (paralytic) ileus and spastic ileus and may closely simulate mechanical bowel obstruction.

3. Mecamylamine as well as other potent ganglion blocking agents are enjoying increasing popularity in the treatment of essential hypertension and "Drug Ileus" should be considered in the differential diagnosis when a patient receiving one of these medications presents with an "acute abdomen."

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STEVENS-JOHNSON SYNDROME

(Continued from Page 484)

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Editorials

John F. Briggs, M.D.
Arthur H. Wells, M.D.
Henry G. Moehring, M.D.

SURVIVAL THROUGH INSIGHT

The world is a place of turmoil, of bloodshed, of naked and covert cruelty. The mass of men lead lives of quiet desperation. We have the means for happiness but most men live in misery, openly or privately. That we tremble on the brink of destroying our species with atomic power instead of using it for security and happiness, reveals in one stroke how irrational, how destructive and self-destructive our behavior is. For today the suffering with which most people live is, in overwhelming part, man made. No longer the elements, wild beasts or even infectious diseases are the great dangers. The central threat is in man himself; it is his hostility to his own kind. Probably no other species in nature is so cruel and destructive to its own members. War, crime, delinquency reveal man's destructiveness to man directly; and underlying hostility to his fellows is central in the neuroses, psychoses, and psychosomatic symptoms. It is obvious in paranoia and in suicidal depressions. It is also central in human affairs, in the home and in business, professional and social life.

We see it regularly in books, plays, movies and television. People try to love each other—husband and wife, parent and child, brothers and sisters—but how often does there flow an undercurrent of hostility. And if a child grows up with hostility to members of his own family, even to his father and mother, small wonder that he becomes hostile to others and often laden with guilt—small wonder, therefore, that the crime rate, the divorce rate, the alcoholism, the cruelty, violence and war, hot and cold, go on endlessly all over the world.

This hostility of people to each other, which keeps humanity suffering in so many ways and in constant fear of each other, is part of a primitive mechanism of adaptation—the fight or flight response to any threat, irritation or frustration. How powerfully people seek to vent hostility in myriad forms, and to escape via alcohol and drugs and mental illness, is a measure of how frustrated and anxious they are. Most people look for the sources of their anxieties and frustrations in the external world alone, in others. But however correct this is, yet there is almost invariably another source —within the person himself.

This inner source of fears and frustration, and therefore of hate and hostility, few people recognize; or they may sense its existence without being able to define it. The basic source is almost always a warping in the emotional development caused during the earliest formative years of life, the most sensitive period being from conception to age about six. "As the twig is bent, the tree is inclined." "The hand that rocks the cradle rules the world." "There are no problem children, only problem parents and environments." "Give me the child until he is six, and you may have him all the rest of his life." The overwhelming weight of clinical psychiatric experience confirms the truth of this folk wisdom and this educational principal. This conclusion is often criticized, even attacked, because of the weight of responsibility it lays upon parents. But it is the truth, and the truth alone will make us free. Only upon it can we build a better world.

At any rate, the great diversity among individual persons is predominantly a reflection of the different emotional pressures through which they have passed in early childhood. It is a result of the differences in conditioning by the training and examples and stresses to which they were subjected during their earliest years by those responsible for them and important to them emotionally. Liddell has shown how the instinctual mother-child relationship can be disrupted as between goat and kid, with devastating after-affects.[1] Each person, as a result of his early conditioning, has at the core of his personality a certain pattern of motivation, reaction and seeing life. The child he once was lives on in the adult, but little changed. If this child is a disturbed one and too greatly influences the feelings and behavior of the adult, disturbing his mature motivations, then all forms of emotional and behavior disorders ensue.

It is of the greatest importance in many ways to understand the nature of this childish core, the nature of the total personality, of emotional maturity and the course of development to it.

Such knowledge is basic to education. No education can be called liberal which teaches subjects not students, books not reality and intellects without regard to their base in the emotional life. No

man is educated who does not know the nature of man.

Such knowledge is important for religious feeling. How can a person feel at one with the forces which move the universe and himself if he has no knowledge of them? Great men have divined these truths, but we ordinary people need laboriously to learn them.

Such knowledge is a sturdy staff and shield in personal living, which is a complicated and difficult task. Knowledge of self aids understanding of others—and compassion for others. Knowledge of others helps understanding of self. Both help toward mature motivations upon which alone any stable life, family, group, nation or world can be built.

Such knowledge provides the key to human behavior and thereby to the central problems of our time: social unrest, crime, cruelty, tyranny, war.

Look at the home life of any individual from birth to six years of age, and you will have the clue to later behavior. The spear creates the shield, the cannon—armour, gun-powder—atomic bombs, missiles—antimissiles. We move to greater danger, greater destruction. We raise orbiting satellites; we raise good mature corn and hogs, but we do almost nothing to raise good mature human beings. The pine tree grows straight if it is not warped early. So do children. But we are a world of bent trees—because children are unwanted, neglected, victims of disrupted marriages (one in three), or over-protected, dominated, and otherwise traumatized by the emotional disorders or only the well-meaning misguidedness of those who rear them.

If throughout the schools and the churches and other agencies and mass media, parents and children both learn the bases of human nature in general, and something of themselves in particular, they will be helped in handling their own lives and in helping others; their capacity for love, brotherhood and co-operation will increase at the expense of hostility; and a step will be taken toward a better world if not toward survival itself. However much we need armaments for the present, in the long run our only security must rest upon the strength of mature adults. In making better satellites for the present, let us not be deflected from the only ultimate need and solution —better people, which means an increased percentage of mature people, which means people of good-will.

What makes Lincolns and Jeffersons or Bluebeards and Billy the Kids, is now known, and much of it can be taught. Such courses have been tried successfully in many places throughout the country at all age levels, from the Bullis plan in grade schools, through Elizabeth Force's course in high school[2] and at college level at Swarthmore and other colleges.[3] Making better people and better lives for individuals is a colossal task, but not impossible. The formula for atomic power is $e=mc^2$. The formula for proper mature people, i.e., people of inner strength and goodwill (for only the strong can be gentle) is proper rearing from birth to six years of age. It can be done. The knowledge is available. The great need now is education at all levels.

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Leon J. Saul, M.D.

THE HOSPITAL AND MEDICAL PRACTICE

Administration Viewpoint

To physician readers, it should be trite to say that hospitals and doctors are two players on the same team. Hospitals exist for the sole purpose of making good service available to the doctors' patients; doctors look to the hospitals for services which they cannot render personally. These include x-ray, laboratory, oxygen therapy, physical therapy, operating rooms, delivery rooms, nursing service, all of which have been provided in response to requests from the medical staff. The sole reason for admitting a patient to a hospital is to take advantage of these traditional services.

Currently, in some eight states, hospitals and a small number of doctor specialists are involved in bitter disputes which, in the light of detailed publicity, are seriously damaging the public's regard for hospitals and doctors alike. In two states the issue has been taken into court. Doctors hold that laboratory, x-ray, physical therapy, electrocardiograms, basal metabolism, and even oxygen therapy, are technically medical, not hospital services. With this label they assert (1) the right of the doctor, not the hospital, to bill for these services

at rates of their exclusive choosing; (2) defend the practicality of each of these departments being "an independent organization within an organization"; (3) demand the transfer of insurance benefits from the service type hospital care plan, to the indemnity type doctor care plan.

Whatever the nature of these services, all agree that it is essential to have them available to hospitalized patients. The public expect them and the courts have consistently held that the hospital board of control is responsible, legally and morally, that these services be available, at high quality, and at reasonable cost to the public. Hospitals hold this responsibility is not discharged by "farming out" a concession for each of these specialties.

Hospitals are accused of socializing the medical profession by the employment of pathologists and radiologists. This is biting criticism to hospitals who remember that in England it was the hospitals, not the medical profession, that were first nationalized. Hospitals abhor the thought of socialization just as much as the medical profession. Hospitals deny they aspire to hire clinical specialists, and insist upon the continued right to engage pathologists and radiologists only because their work is entirely distinct from that of the clinician:

1. It is rare for a pathologist or radiologist to be selected by the patient; a particular specialist assists because he happens to be the pathologist or radiologist serving the hospital. These specialists have no private patients of their own for whose care they are responsible.

2. These doctors step into ready-made, full-bloomed income from the day they commence their service; they have a monopoly of their specialty for all hospitalized patients; they need no concern for competition and they suffer no loss of income or patients during vacations or other absences.

3. The specialists spend much of their time on tasks for which compensation is justified but which cannot be charged to the patient, such as autopsies, teaching, supervision of personnel and research.

4. Most important, the pathologist and radiologist do virtually nothing solely by themselves. Much of the work in these departments is done by technicians; yet these specialists are demanding that they collect not only for what they personally do, but for what is done by a corps of technicians as well.

Physicians say that if hospitals are permitted to hire radiologists and pathologists they will hire pediatricians, surgeons, and obstetricians as well. Hospitals say that new financial arrangements for laboratory and x-ray will be precedent for labeling many other hospital services as medical services subject to control of doctors, financially independent, and removed from the jurisdiction of the board of trustees. Concessions for x-ray, laboratory, E.K.G., E.E.G., physical therapy oxygen services, each independent financially and in management prerogatives, would reduce the hospital to an administrative monstrosity incapable of rendering efficient service.

It is time the controversy was settled nationally and locally. During five weeks of the Iowa court trial not one proposed improvement over the present system has been substantiated;—the only demand is a change in the flow of money together with an ill-defined search for prestige. "I want to be considered just like the surgeon," is an oft-repeated phrase. Yet, surgeons do not seek the privilege of employing the operating room nurses and billing for their services. With the unquestioned high quality already attained in laboratory, x-ray, and other hospital services, and with the earnings of pathologists and radiologists now near the very top of all medical specialists, what is the evil of the present system that is so deplored? And if there are evils, will calling the services medical services instead of hospital services correct them? Will the mere change of the flow of money correct them? Will either the name change or the revised flow of money benefit the patient?

The pearl of prestige is something only the medical profession can bestow—not the hospitals. Hospitals that are not properly equipping and staffing these departments should find funds and do so. If there is interference with the doctor's professional freedom, it should cease. If there is exploitation of doctor, hospital, or patient, it should be corrected. Physicians who are earning well above the average of other specialists and who are free to render the professional service for which they have been trained, should leave the management responsibilities to the business men on hospital boards. Hospitals and doctors together must solve our problems of providing health services to the public.

Donald W. Cordes
Des Moines, Iowa

IOWA HOSPITAL-DOCTOR LAW IN EFFECT

The long-lasting hospital-doctor controversy in Iowa has ended. A settlement has been consummated that is effecting a smooth, gradual transfer of pathology and radiology services from Blue Cross to Blue Shield.

This problem began in Iowa in April, 1952, when the House of Delegates of the ISMS passed a resolution requesting Blue Shield to investigate the possibility of extending its benefits to take over medical services that were being provided by Blue Cross. This action by the policy-making body of the Medical Society set off a series of events.

Numerous conferences were held between officials of the ISMS and Iowa Hospital Association in an effort to reach agreement on the transfer of pathology and radiology from Blue Cross to Blue Shield, but to no avail. The Iowa Hospital Association would not concede that pathology and radiology were integral parts of the practice of medicine and that these medical services properly belonged in Blue Shield contracts rather than in Blue Cross.

These early negotiations reached a climax when the Iowa Attorney General, on request of the Iowa Board of Medical Examiners, issued an opinion on February 19, 1954, upholding the Medical Society's contention that pathology and radiology are integral parts of the practice of medicine. The Iowa Hospital Association, being unwilling to accept the Attorney General's interpretation of Iowa law, challenged it by instigating a lawsuit in Polk County District Court January 31, 1955. This trial lasted sixty-three days. On November 28, 1955, Polk County District Court Judge C. Edwin Moore handed down a decision which supported the earlier Attorney General's interpretation of Iowa law.

On December 28, 1955, the Iowa Hospital Association filed an appeal of the District Court's decision to the Iowa Supreme Court. While this decision was under appeal, a series of conferences between Medical Society and hospital officials resulted in the preparation of a Joint Declaration on Hospital-Physician Relations. This agreement, which was approved by the hospitals and doctors on November 15, 1956, served as the basis of the 1957 Iowa General Assembly House File 21, a joint effort of the doctors and hospitals. This legislation became law April 8, 1957.

Passage of House File 21 accomplished the following: (1) The law clearly establishes that a hospital cannot practice medicine in the state of Iowa. (2) It precludes an employer-employe relationship between a physician and a hospital. (3) It acknowledges that pathology and radiology are medical services. (4) It requires the inclusion of pathology and radiology in the Medical Service Plan (Blue Shield), and not in the hospital plan (Blue Cross). (5) It requires that bills for pathology and radiology must be submitted in the name of the doctor. (6) It does not disturb the favorable Polk County District Court decision on hospital-physician relations which holds that corporations, including hospitals, cannot practice medicine in the state of Iowa.

On May 29, 1957, the Iowa Hospital Association dismissed its appeal to the Iowa Supreme Court. In accordance with the provisions of House File 21, plans have been completed for the transfer of medical services from Blue Cross to Blue Shield. This transfer is confirmed in the following paragraph which is an excerpt from a Blue Cross-Blue Shield Executive Bulletin that was sent to all Iowa physicians and hospitals under date of July 8, 1957.

> Over the period of one year, as new Blue Cross and Blue Shield members are enrolled or old memberships are renewed, no Blue Cross certificate will contain coverage for pathology and radiology, but the Blue Cross certificates will carry a Blue Shield endorsement or be accompanied by a Blue Shield certificate which will include coverage for pathology and radiology services. Thus, each present Blue Cross member will eventually have coverage for pathology and radiology provided by Blue Shield. This will, of course, mean that the cost for coverage of these services will no longer be a part of Blue Cross premium but will be included in the Blue Shield rate. The form of coverage may be slightly different in some respects, but the dollar cost to the subscriber will be substantially the same as it has been in the immediate past.

Effective November 1, 1957, Blue Shield began providing pathology and radiology benefits to Blue Cross-Blue Shield members on the anniversary dates of their memberships and to members in new Blue Cross-Blue Shield groups. These medical service benefits will be made available to the public for the same premium that has been previously charged by Blue Cross. This is possible since the pathologists and radiologists have agreed to accept Blue Shield allowances as payments in full and have further agreed to underwrite any increase in Blue Shield administrative costs resulting directly from transfer of x-ray and laboratory services from Blue Cross to Blue Shield.

Since the basic principles on proper hospital-physician relations have been clarified, the problem is being returned to the local level where contractural agreements should properly be developed to meet local conditions. In accordance with House File 21, each hospital is required to enter into agreements with physicians to direct and supervise pathology and radiology departments. Some hospitals are entering into agreements with pathologists and radiologists, while others are negotiating contracts with non-specialist staff members.

Most important, the new Iowa law on hospital-physician relations requires actual rather than nominal supervision of pathology and radiology departments by physicians. There is no question but what this unhampered professional supervision by physicians will enhance the expansion of these medical service departments and the quality of medical care.

Donald L. Taylor
Iowa State Medical Society

CLINICAL PSYCHOLOGY—FUTURE

The two previous editorials in this series outlined the historical past and the current status of clinical psychology. This will speculate on the future of the field and the reader should view what follows as the individual opinions and guesses of the author. No uniform consensus is as yet evident across the country.

Several facts are at hand on which to base opinions. The mass of people requiring help in the mental health field far exceeds the number of trained personnel in any category: psychiatrists, psychologists, social workers, and psychiatric nurses. The serious understaffing of the public mental hospitals is a case in point.

As public awareness of the need for mental health services of many sorts continues to grow—needs in the public hospitals, in the courts and the judicial system, in community agencies, and in private practice services—it seems inevitable that public demands will be felt as a strong force to create the required services. It is not even remotely possible that there will be enough psychiatrically trained physicians in the foreseeable future to handle the case load unless radically new and highly effective treatment methods are developed. If not treated by physician specialists, then by whom?

Research in mental illness is just beginning to expand and herein ultimately lies the hope of the future. But such researches are highly complicated and methodology poses weighty problems. Here again a bottleneck exists in the virtual absence of qualified research personnel, physicians in particular. A large job for the quarter century ahead is the recruitment and training of researchers and the provision of laboratory facilities. Who will carry the brunt of mental health research? Physicians? Probably not in any significant numbers unless current patterns of career selection change radically.

It appears inevitable that increasingly large numbers of non-medically trained personnel must be made welcome into both the clinical and research areas. It is probable that the future will see many more clinical psychologists, trained under a somewhat revised curriculum and in closer collaboration with the medical schools, develop to help meet the needs. It is particularly likely that the field of psychotherapy (which does not require an M.D. once the patient has been carefully examined to determine physical and neurological status) will, to a large degree, pass into non-medical hands. It is possible that a new specialist may evolve for this work with his training a cross-section of applicable knowledge from psychiatry, psychology, and social work. It is probable that the psychiatrist will come to confine himself more closely to "doctoring" in the traditional sense: diagnosis, organic treatments that do require medical training such as shock therapy and drug therapies, and in research activities that need medical background and orientation. In other words, the roles of the physician specialist and the non-physician specialist will come to be better defined than at present, and by the same token economies in the use of scarce personnel will be effected.

The years ahead will see unquestionably, barring international disaster, research expansion in mental health, the nation's Number One health problem, that we do not dream of today. The handwriting is already on the wall with federal funds for such research slightly ahead of the ability to use them in well controlled projects, but this is a tremendous stimulus and the gap will close. The 1957 Minnesota legislature showed remarkable foresight in this direction by creating a special fund for the training of personnel in mental health research at the University. As in any field of

illness, the ultimate hope lies in techniques of prevention and herein one is talking of research. The clinical psychologist undoubtedly will play a key role in this progress.

Hence, as of 1958, we find the mental health field in a state of transition. Clinical psychology and the clinical psychologist have come to play an important role in teaching, research, and service to patients. One may guess an increasingly significant role for the clinical psychologist in the years ahead.

Donald W. Hastings, M.D.
University of Minnesota

THE ROLE OF THE BASIC SCIENCES IN MEDICINE

II. New Tools and New Horizons

Thomas Huxley once said, "Science is method." One might equally well say that revolutionary progress in science depends upon new developments in methods of study. It is mainly because the last half century has seen the development of so many new methods of study of living systems with chemical and physical tools which have just begun to be applied that one cannot fail to be optimistic about future discoveries. To name a few, one may mention isotopic tracer methods of study of movement and of metabolism; protein study by electrophoresis, ultracentrifugation, enzymatic degradation and identification of components; paper and column chromatography; electron microscopy; infrared and other spectroscopy; nuclear magnetic and electron spin resonance; cytochemistry of enzymatic processes as well as of composition; chemical approaches to genetic characters; tissue culture techniques in relation to host-invader relationships. In the realm of chemotherapy, there are the astronomic possibilities of varieties of possible synthetic compounds to be studied according to reasonable plans, after fundamental clues as to desirable characteristics become known.

The supply of new tools available today for investigating biological problems of medical interest and importance is such that in recent years enormous strides in basic knowledge have been taken, and it is inevitable that further large advances will come simply by further exploitation of these tools. Problems by the score which are now susceptible to attack are apparent to every investigator. The main question as to when new knowledge of such sorts will be obtained is that of when a competent investigator will actually get to work at it. For example, in the field of the mechanism of action of bacterial endotoxins in producing circulatory shock one knows today that vasoactive chemical substances are produced by the action of endotoxin and carried in the blood plasma. But the substances have not been identified. Yet methods for such identification are known, such as column and paper chromatography and microchemical and biological techniques for assay after separation. It will require only intelligent development and application of such methods to track down those substances. Furthermore, physiological methods are available to ascertain where the substances come from, as well as what structures they affect. Therefore, one can predict with some assurance that such factual questions will be answered fairly soon. Similar situations prevail in connection with fundamental aspects of many medical problems.

For some problems, no such obvious solutions are in sight. In the case of carcinogenesis, for example, one cannot say with any assurance what progress would be made if all the known tools were to be applied to the limit in its study. Obviously, there is every reason to continue to apply every existing means of study to attempt to determine exactly what the difference between a neoplastic and non-neoplastic cell is (in basic terms) and what precise processes or properties of the cell are changed by carcinogenic agents. It may easily turn out, however, that we do not have the tools today to do the job. It would be foolish to assume either that we do or that we do not have adequate tools, because those that we have are not yet by any means fully exploited. Nevertheless, we must certainly be on the lookout for new or improved tools which might open entirely new horizons to study.

Medical science and biology generally are dependent upon physics and chemistry for intellectual as well as mechanical tools. A new chemical concept might be more important than a new gadget in solving, for example, the cancer problem. Some clarification of the theories of chemical structure and energies, which would allow one to understand the mechanism by which self-duplicating structures operate in living systems would put new thought into the entire problem. If one knew how genic materials operated at the level of compound synthesis, one might approach abnormal synthesis with more hope of understanding it.

Likewise, in such problems as those of the central nervous system, one is probably entitled to doubt that our current conceptual tools are fully adequate to their solution. One dare not say so positively, because the tools have not been fully applied as yet, and certainly great progress has been made in neurochemistry, neuropharmacology, even psychopharmacology, and in neurophysiology generally. The dark curtain of superstition is being drawn from the field of the functions of the brain, but the rather gross demonstrations of dependence of mood and fantasy and hallucination upon chemical factors are only crude beginnings toward a science of higher nervous system function, as are comparable demonstrations that stimulation of certain regions of the brain produce one or another sensation or response. These beginnings are dramatic and important, but like Columbus' discovery of the Americas, they will have to be followed by systematic exploration and complete development before the New World of the mind as physical chemical phenomena of brain function is settled usefully. At present, the most one can say is that rapid progress toward verified knowledge is being obtained about the physiology and functional pathology of the brain.

Therefore, in many areas important new developments in medicine may await the construction of new investigating gadgets of science or new intellectual concepts of science. And in many cases these developments will probably be in mathematics, physics and chemistry, as they have been in the past.

MAURICE B. VISSCHER, M.D.

RESPONSIBILITY FOR PROFESSIONAL GROWTH

A paramedical group in an institution, whether they be technologists, recorders, dietitians, technicians or librarians has an obligation to keep abreast in their own fields with the changing patterns of their work as it is affected by the fast moving pace of the medical sciences. A complacent resting on the knowledge possessed when the hard-earned bachelor's or master's degree became a reality may become a menace to progress unless the philosophy that learning in order to be dynamic must be always in search of newer goals is operative. A librarian looking for the first time at the boundaries of her department might well take inventory of what, to her, will become opportunities of personal and professional growth in the field. On these discoveries and choices will depend the dimensions of her career and, to a great extent, her contribution to the over-all objective of the medical profession which is the improvement of patient care on an increasingly high level and the prevention of illness.

Outstanding opportunities for in-service education are the formal and informal contacts with the medical profession. Chameleon-like, individuals take on the vocabulary of the group with whom they associate—whether that association is in a social or professional environment. The unconscious deepening of understanding of a subject is one of the rewards of working with people who have conquered a field of knowledge after many painstaking years of effort. A doctor explaining an unfamiliar term or a seldom-heard-of disease, about which he himself needs more information, is indirectly adding knowledge to a mind that is, by profession, both curious and receptive. Many doctors are gifted informal teachers. Fortunate the medical librarian if she numbers many of them among her clientele!

Attendance at lectures and meetings held by the professional staff is a further means of augmenting knowledge. Besides the interest that specific subjects and cases stimulate, medical terminology comes to life, often for the first time, during a well-developed lecture with visual demonstration. Since the librarian has the disadvantage of being on the health team, but not actually being a part of it, since she does not see the clinical picture of the disease entities which she is often well acquainted with in print, any materials that supply this important third dimension make the work of the medical librarian more vital and add to the future usefulness of the reference librarian.

Many advantages for increasing knowledge are inherent in the nature of the work. It is impossible to be exposed to materials, through indexing, classifying, and searching the literature, without absorbing important bits of information. While the time element makes it impossible to linger over new materials as they are processed for patron use, a librarian develops a learn-on-the-fly technique, often supplemented by a retentiveness, which, if not always detailed and accurate, is spacial and leads her to the right information at crucial moments.

One of the greatest avenues of growth is

through the medium of professional associations. Through "belonging" a librarian meets her fellow workers, in print and at meetings, shares common problems with them and is stimulated and renewed by her contacts with them. Still other facets for professional improvement are institutes, refresher courses and workshops. These are opportunities to hear and discuss with authorities trends, newer and better technical processes, ways and means of broadening the library's influence. In fact, the possibilities are legion. Universities and associations are generous in organizing and sponsoring these courses; librarians demonstrate their intelligence by utilizing as many learning opportunities as are consistent with their work and within the limits of the library budget.

Probably in no profession are the opportunities for mental growth so abundant as in this one. But librarians, perhaps more than personnel in any other profession, because they are on the dispensing end of knowledge, need a reminder similar to the one that St. Paul, as a preacher, directed to himself. It might be paraphrased to read: I rejuvenate my intellect in ways that are offered me both within and without the profession, lest I, who have aided others to grow intellectually and scientifically, become an intellectual castaway. Two much sampling can well surfeit one's appetite for a regular meal. That is the danger. An eight hour day of printed words may cause satiety. To suffer malnutrition in an atmosphere where mental food is plentiful would surely be the greatest professional failure of all. Librarians know the pitfall. Happily, there are many ways of avoiding it.

Sister Teresa Louise
Medical Librarian

THE TRANQUILIZERS

M. Jourdain, a character in Molière's comedy, "The Would-Be Gentleman," was startled to learn that all his life he had been speaking "prose." Similarly, though we don't think of ourselves as psychotherapists, most physicians practice some form of psychotherapy every day with every patient. The "bedside manner," the "sympathetic ear," the "education of the patient," are all psychotherapeutic techniques.

Thanks to the tranquilizers, general medicine and psychiatry have become more closely related, and the family physician can now provide specific, effective treatment for many mental and emotional disorders. The singular benefits these drugs confer on the mentally ill make their development one of the greatest advances in modern medicine. Indirect, intangible, but perhaps no less significant, are the changes these drugs have caused in our approach to therapy. I believe that they have given many of us who are not psychiatrists a heightened awareness of the important role psychic unrest plays in all illness, and that this increased awareness helps enhance our understanding of patients.

However, there is another side to the coin: the danger of relying too heavily on this or that drug; the expectation that the drug will do a job it was not designed to do. The enthusiasm generated by these new drugs is more than warranted. But we must guard against over-enthusiasm, and we can't expect the pills to do the whole job. The tranquilizers are valuable adjuncts to—not substitutes for—psychotherapy, even if it is as casual and informal as the physician's friendly chat with his patient. Now, this may be an obvious truth but it is one I would like to emphasize because many of us tend to put it in the background when discussing the remarkable progress of pharmaceutical research.

There is no doubt that, judiciously used, several of the tranquilizers have proved extremely valuable in treating emotional distress. In three future editorials, I shall endeavor to describe how the drugs act, how patients react to them, and some interesting recent research.

Maurice R. Nance, M.D.

MORNING VS. EVENING TYPE

Are you a morning type or an evening type?

The world's poulation can be divided into those who "bound out of bed in the morning eager to greet the new day" and those "who prefer to sleep late, get up under protest and are irritable until late in the morning," reports Dr. Wayne G. Brandstadt of Chicago.

"In children deep sleep occurs at the end of the first or second hour and again between the eighth and ninth hour. It has been postulated that adults of the morning type have their deepest sleep at the end of about the third hour with no second period of deep sleep; the others retain the childhood pattern and cannot get going when the alarm goes off."

Dr. Philip Hench has suggested that a difference in the blood level of hydrocortisone at different times of the day may account for the two types.

"Aside from a curiosity as to the cause of this phenomenon, it is of some practical importance in that, when members of the opposing camps are thrown into intimate contact as college roommates or marriage partners, adjustment may be very difficult," Dr. Brandstadt declared.—Brandstadt, W. G.: Morning type or evening type, *The New Physician,* 7:8 (May) 1958.

President's Letter

ASSOCIATION COMMITTEES

At the February, 1958, meeting of the Council of the Minnesota State Medical Association, a committee was appointed to study the work of the Association. The Association's work has been carried on by various committees which have been authorized at various times to carry on rather specific activities. It is now a long time since a study has been made to determine the present value of these committees and the need of the projects being carried out. Some of the committees are traditional and may have outlived their usefulness; others have found their fields of endeavor changing. Overlapping activities are becoming apparent, in some areas the same type of work is being done from various angles, and it seems that the Association is trying to go in several different directions at the same time.

Among the scientific committees, the Tuberculosis Committee and the Heart Committee have both been very busy. They have both carried on activities which are valuable to the profession as a whole and to the people of the state. The Tuberculosis Committee has co-ordinated the work of medical men, administrators of sanatoria, those working with men in industry and those working with hazards in animals and foods. The Heart Committee is involved with cardiac and circulatory disease, and from there gets into other diseases in the chest and arteries. These two committees have suggested that they be merged into a single committee on diseases of the chest, or at least their membership be interlocking. Perhaps, because of the general use of admission x-rays of the chest, the newest committee on the list, the Committee on Radiation and Radio-active Isotopes, should be represented in this more general committee, even though there are many other uses for radiation than just examination of the chest.

The Committees on Trauma and Industrial Health were set up with different objectives and their memberships are separate. Yet their fields surely overlap to some extent, and there should be co-ordination in their activities. There is another committee, not of the State Association, but appointed by the State of Minnesota, originally with the advice of the Council of the State Medical Association, the Medical Advisory Committee to the Division of Vocational Rehabilitation. This committee is official and has been doing a very good job without fanfare, and almost unnoticed by the rest of the profession. The members of this important committee represent the various segments of the practice of medicine and deserve the co-operation and support of their fellow practitioners, and they should have the benefit of the experiences and advice of our committees in their respective fields.

These are just samples of how a once-well-co-ordinated committee organization can become complicated, and these include only the scientific committees. When we get into the non-scientific committees, our situation is likewise involved, and to those of us not on the individual committees, more than a little confusing. Dr. A. O. Swenson of Duluth has ideas which he has proposed for revamping some of the non-scientific committees. The study committee is working on these and other ideas. We hope that many of you, especially those of you who have served, or are serving on committees, have suggestions. We would like to have the benefit of your ideas and would appreciate it if you would let us have them, by means of a call or a letter addressed to the State Association office. You may be sure that they will be given careful and serious consideration, and that the Association and the profession will benefit from them.

Horatio R. Sweetser

President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

POLIO VACCINE FIRMS INDICTED

Criminal indictments against five licensed manufacturers of Salk poliomyelitis vaccine have been returned by a Trenton, New Jersey, grand jury. The defendents have been charged by a grand jury of twenty-three men, with a combination and conspiracy to monopolize production and eliminate price competition. The decision was based upon evidence presented during the last year by the Antitrust Division of the Department of Justice.

Information contained in the indictment states that sale of the vaccine—from its licensing in April, 1955 through 1957—was in excess of 205 million cc. valued at about $125 million. About 103.5 million cc. were sold to public agencies. Most of these purchases were financed with $53.5 million in Federal funds granted to the states under the Poliomyelitis Vaccination Assistance Act of 1955. Under the terms of the Sherman Anti-Trust Act, the acts alleged by the grand jury are unlawful. Similarly, individuals and other public and private purchasers could seek treble damages in civil suits according to the provisions of the Dayton Act.

Plaintiffs would be required to prove injury suffered in the absence of competitive pricing. Likewise plaintiffs would have to convince the courts that prices were excessive as well as non-competitive.

Although a suit for treble damage is possible, it has been indicated that the government may invoke the single damage provision in the matter of the Salk vaccine purchases.

ARMY MEDICAL SERVICE CORPS ANNOUNCES CHANGES FOR COMMISSIONS

The Army Medical Service has announced a liberalization of the restrictions on the granting of Regular Army Commissions in the Medical Service Corps to highly qualified professional candidates.

Applicants for commissions to the Medical Service Corps, Regular Army, will no longer be required to serve a period of active duty before being appointed.

It will now be possible to appoint to the Army Medical Service Corps selected college graduates in almost all the professional and technical fields who hold master's degrees or doctorates or baccalaureate degrees with three years of experience, reserve officers now on duty with the Corps, and outstanding enlisted personnel or warrant officers.

Officers whose previous applications were rejected may reapply at any time they meet the qualifications shown in these Army regulations.

Another liberalization of restrictions is the modification of the age requirements, accomplished by subtracting all periods of active commissioned service since December 6, 1941, from the current age of the applicant to determine whether or not the age limit of thirty years is exceeded. Only applicants who can complete twenty years' active commissioned service by age 55, are eligible to apply.

MEDICARE CHANGES ANNOUNCED FOR MINNESOTA PHYSICIANS

New Maternity Schedule.—A new maternity schedule has been negotiated with the Government. Any maternity care rendered since May 1, 1958, is paid by the office call in accordance with the new schedule, rather than by the trimester. It is therefore necessary to have on each form: (a.) LMP and EDC dates. (b.) Number of office calls. (c.) First and last date seen. Claims not having this information must be returned to the doctor for the proper information. It is believed that this new method of payment will be more equitable.

New Drug Policy.—Beginning July 1, 1958, the Government will not pay for oral medication dispensed or prescribed by doctors for maternity patients and other authorized persons. The Government will continue to pay for drugs administered parenterally if given to maternity patients or other authorized persons. To receive payment for such drugs, the doctor must: (a) identify the nomenclature of the drug, (b) give the quantity of the drug, (c) give the cost of the drug. Break-

age or service charge is not payable. All claims for drug items furnished before July 1, 1958, will be paid in full.

PLEASE NOTE: All doctors will soon receive a complete Medicare book listing all procedures and giving complete instructions. We have received permission from the Government to print the book.

MEDICARE COST DATA RELEASED

Facts about Medicare released to the public recently from the transcript of hearings by the House Appropriations Committee include the following:

Costs.—The sum of $69.2 million was spent by Medicare in the first year of the program's existence. This amount was almost equally divided between physicians and hospitals. Maternity claims ranked number one in popularity and averaged $224. Costs of other medical services were as follows: appendectomies—$335; respiratory infections—$164; costs for the processing of Medicare claims by medical societies or other fiscal agents such as Blue Shield ranged from less than three dollars to more than eleven dollars.

Utilization.—The number of eligible Medicare dependents at the end of 1957 was estimated at two and one-half million.

The transcript also notes that during the first eight months of 1957, there was a 35 per cent increase over 1956 in the average patient load of servicemen's dependents in military and civilian hospitals.

NEW HEW SECRETARY NAMED

The newly appointed secretary of Health, Education and Welfare is Arthur Sherwood Flemming, manpower specialist, educator and former director of the Office of Defense Mobilization. Mr. Flemming succeeds the present secretary, Marion B. Folsom, who will resign late in July to re-enter private business.

MILK IS FOUND SAFE AGAINST RADIOACTIVITY

The Public Health Service has announced the results of a year-long pilot study conducted to determine the effects of radioactivity on milk.

The findings indicate that milk consumed in and about Sacramento, Salt Lake City, St. Louis, Cincinnati and New York City has been found to be well below the permissible limits for radioactivity. The amounts of Strontium 90 concentrations in the samples tested ranged from 3.4 to 7.4 micromicrocuries per liter. This represents about one-tenth the maximum amount of concentration permissible for regular consumption of milk.

Moorhead, Minnesota; Fargo, North Dakota; Atlanta, Georgia; Spokane, Washington; and Austin, Texas, are points chosen for future studies.

HOW THE PHYSICIAN MAY GUARD AGAINST MALPRACTICE CLAIMS

Ways in which the practicing physician may guard against malpractice claims are set forth by Lt. Colonel Raymond Coward, Judge Advocate General's Corps, in his article, "Malpractice and the Service Doctors," in a recent issue of the *Armed Forces Medical Journal.*

Colonel Coward, Chief of the Legal Office in the Army Surgeon General's Office, Washington, D. C., writes that the service doctor is less likely to be sued in his individual capacity than a doctor in private practice. This is due to the protection given service doctors by the Federal Tort Claims Act and other Federal laws and regulations.

The Colonel gives a ten-point guide which will enable the physician, in the Armed Forces or in private practice, to avoid or at least reduce the number of medical professional liability claims.

These points include: (1) avoid careless remarks about the medical treatment the patient may have previously received from another doctor; (2) keep thorough, accurate, complete medical records; (3) make thorough examinations of the patient; and (4) do not experiment with unproven medicines.

MINNESOTA PHYSICIANS AGAIN VETO SOCIAL SECURITY

Members of the Minnesota State Medical Association have once again expressed their opposition to compulsory social security coverage for physicians. Results of a postal card ballot conducted among member physicians as of May 15 is as follows: Total number of members as of May 15—3,533. Total number who returned cards—1,847. Defective votes which could not be counted—10. Percentage of members who voted—52. Total number who voted *for* social security coverage for

physicians—817. Total number who voted *against* social security coverage for physicians—1,030.

In May, 1956, a similar poll was conducted. Physicians were asked the following questions: (1) Are you in favor of compulsory social security for physicians? (2) Are you in favor of voluntary social security coverage for physicians? (3) Are you against any extension of the social security laws to cover physicians? (4) Please fill in your age bracket. These were the results: A total of 3,366 letters were sent out, and on May 15, 1956, the response totalled 1,908, or nearly 57 per cent. Of the physicians replying, 233 (12 per cent) favored compulsory coverage; 1,155 (61 per cent) responded favorably for voluntary coverage, and 530 (27 per cent) opposed any type of social security coverage.

The House of Delegates at the 1957 annual meeting passed a resolution opposing the inclusion of doctors into a compulsory social security program.

NEW YORK PHYSICIANS FAVOR SOCIAL SECURITY

The New York State Medical Society, at its 152nd annual meeting, reaffirmed its stand favoring compulsory social security for its 25,000 member physicians. A similar stand was taken by the New York group last year. In reaffirming its last year's stand, the New York State Medical Society House of Delegates voted to ask Congress to include doctors under social security.

The New York House of Delegates also went on record urging the AMA to take an immediate mail poll of all members to "ascertain the true will of the majority."

The resolution adopted by the New York group specifies that such a poll be confined only to the simple, primary question: "Do you favor inclusion of self-employed physicians in the Federal social security system on a compulsory basis?" And it enjoins the AMA to omit "any confusing reference to the Jenkins-Keogh bill or coverage on a voluntary basis, which is entirely outside the realm of possibility."

BEWARE OF THE TRANSIENT ADDICT

In 1931, *The Journal of the AMA* listed the following rules relative to prescribing narcotics and habit-forming drugs. These rules are as sound today as they were twenty-seven years ago.

1. Secure a complete history of the ailment from the patient himself.
2. Make a complete and thorough physical examination in every case.
3. Ascertain whether the illness requires narcotics and good medical practice demands their prescription.
4. Use non-habit forming drugs instead of opiates wherever possible.
5. Beware of strangers and itinerant patients who suggest their need for drugs.
6. Remember always that improper and prolonged dosages can cause an individual to become an addict.
7. Don't write a prescription in order to obtain drugs for office use. That supply should be secured on a proper drug order form—not on a prescription blank.

AUBREY GATES IS NAMED TO FORAND STAFF TASK FORCE

Aubrey Gates has been named Campaign Co-ordinator of the Forand Staff Task Force. Jim Foristel will return to the Washington Office, continuing, however, as a member of the Staff Task Force and, among other duties, carrying out assignments from the Washington Office.

John Guy Miller, staff member of the Council on Medical Service, has been transferred part-time to the Staff Task Force and will act as Assistant Campaign Co-ordinator.

WILL HOLD SECOND CONFERENCE ON UNIFORM LABELING LAW

The second in a series of conferences to discuss model legislation for labeling hazardous substances will be held July 25, at the American Medical Association's Chicago headquarters.

Sponsored by AMA's Committee on Toxicology, invitations have been sent to more than sixty organizations representing trade associations, toxicity-testing laboratories, chemical trade unions, and other interested groups.

Under discussion will be the "Uniform Hazardous Substances Act" which has been drafted by the committee and is intended to close the gap in label legislation.

Bernard E. Conley, Ph.D., committee secretary, said, "Existing legislation shows a sketchy, non-uniform, and generally inadequate pattern of labeling regulations at state and national levels."

"Ninety per cent of the states lack requirements for the precautionary labeling of commercial as well as household chemical products," he added.

More than forty organizations, including representatives of government, agriculture, and medicine, attended the first in this series of conferences in Chicago on May 9.

History of Medicine in Minnesota

A MEDICAL HISTORY OF MEEKER COUNTY PRIOR TO 1900

HAROLD E. WILMOT, M.D.

Litchfield, Minnesota

(Continued from the April issue)

Daniel Hoyt of Cosmos and Mike Condon and Mike Flynn of Forest City were among those who froze to death. The local impact of this storm is well summarized in the forty-year-ago news column in the *Litchfield Independent Review* of March 19, 1914:

"At the request of a number of old timers we have gone to our files for an account of the terrible blizzard that occurred here more than forty years ago in January, 1873.

"Tuesday, January 7, 1873—A warm day with spring-like zephyrs from the south changed suddenly with a shift in the wind about 3 p.m. to one of the worst blizzards this area has ever experienced. Many farmers in town because of the mild earlier weather sought shelter at hotels and with friends, and fifteen of them were lodged overnight at S. A. Heard's store. Mrs. T. G. Crump and Mrs. Adams of this city were out riding when the storm hit and took refuge at the nearest farmhouse.

"All trains are abandoned with not a one trying to make a move on Wednesday, the second day of the storm. Tuesday night the passenger train got stuck in drifts west of Benson with passengers and crew marooned several hours before the line was cleared to Benson. Henry Jenks' freight train made the run to Darwin but only with engine and caboose. The rest of the cars being left here. The stagecoach from Dassel to Hutchinson started on its way from Dassel Tuesday afternoon but got lost in the storm and after a hard struggle brought up at this place, the team having wandered from the road and the storm so fierce the driver became bewildered, he was nearly frozen.

"More than a week after the blizzard, on January 16, the G. N. snowplow had cleared the line as far as Atwater but three miles west of that town the plow struck a drift that stopped her. The engines backed away about a mile and took a run for it, hitting the drift with full force. The plow was broken in three pieces and the forward engine ran up into the bank its full length and was six feet about the track when it stopped. The drift that foundered the plow estimated as 20 feet high.

"In Kandiyohi county, twenty-seven persons are missing and fifteen of them are known to have perished in the storm. Two are known to have died in this vicinity. All together the storm raged three days. Those who had cattle and horses in the barn were obliged to tie clothesline from the house to the barn to guide them and insure reaching the house after they had cared for the stock."

Another terrific storm occurred in 1888 which is best described in a column of the *St. Paul Pioneer Press* of January, 1955:

"DISASTROUS 1888 BLIZZARD RECALLED ON ANNIVERSARY. A teacher and eight children huddled on their knees in the middle of a sod schoolhouse near Hadley, Minnesota, sixty-seven years ago Wednesday. They were praying for their lives. The temperature fell to 40 below, and fine, crystal-sharp snow was driven by a fifty-mile-an-hour wind. The blizzard of 1888 was one of the worst in the nation's history. It swept through eleven mid-western states. The teacher and eight children were rescued by a pioneer farmer.

"But, before the winds and snow stopped, 109 were dead in western Minnesota alone. In the entire storm area, the death toll reached 500 to 1,000. The storm started in Canada the night of January 11, dropping the temperature to 40 below at St. Vincent,

Minnesota, near the Canadian border. Ahead it was unusually warm. Newspaper accounts said there was a dead calm and children came to school 'without their ragged overcoats.'

"First sign of the storm was a 'wall of white coming across the prairie.' Its suddenness caught many unprepared. A father and son were trapped in the barn only a few steps from their rural Chokio, Minnesota, home. They stayed in the barn twenty-four hours.

"A teacher and six pupils had to stay in the schoolhouse two nights near Pipestone, Minnesota. They tied a rope around the oldest boy while he went outside to get wood for a small stove. Visibility was zero. At Huron, South Dakota, Policeman O. H. Van Dyke burrowed into a snowbank in 35-below weather. He stayed there about twelve hours, his legs frozen stiff."

A few bear and many deer and wolves were killed in these early days; and while not dangerous except in exceptional cases when deep snows drove the wolves to extreme boldness, they certainly did not contribute to the peace of mind of the inhabitants. Witness a column in the *Litchfield News Ledger* of December 16, 1886:

"Miss Kitty Hayford, of this city, is teaching the school in the Larson district, just west of Long Lake, in the town of Acton. Last Friday evening she started to go from the school house to the place where she is boarding, a distance of about three-quarters of a mile. When she had gone perhaps half of the distance she discovered that two wolves were following and gaining gradually upon her. She commenced walking faster and had got some distance further on when a couple of men driving on a road crossing the one upon which she was traveling called to her to run, at the same time shooting and killing one of the wolves. Miss Kitty obeyed the command and ran as fast as she could, the remaining wolf continuing after her, gaining all the time.

"As she neared the place where she boards, she was aware that she could not make the house, so she ran up on the drive-way to the barn. The wolf ran up to the drive-way, but seemed afraid to proceed further. There it stood, however, and kept Miss Kitty from going to the house until a man drove up with a load of hay and frightened the wolf away. To say that Miss Kitty was frightened but states it mildly and to say that any one else would have been, in her place, hits the truth square on the head. It seems to us that when the wolves get so plentiful and ravenous as to endanger human life, it is about time that some sort of a determined effort was made to exterminate them."

Notes in the *Litchfield Independent* are interesting:

February 22, 1887: "Several wolves were seen on Lake Ripley Sunday and others are reported at various points almost daily."

March 1, 1887: "A Cedar Mills man had his clothes torn half off by an attack of four wolves when he held them off by yelling, and a team of horses came to his help."

However until the 1870's deer, smaller game and the myriads of wild fowl contributed greatly to the larders of our forebearers, not to mention the fish, taken by the "wagon load," from our teeming lakes and streams. This wildlife is all still present within our borders though in greatly diminished amount.

The summer of 1873 saw a terrific infestation of locusts which truly ate up whole fields throughout the agricultural areas of Minnesota and the Dakotas, leaving our state with less than half a crop. I believe the locusts returned in decreasing numbers for another year or two. Grasshoppers caused severe destruction of crops in the 1880's.

Due to primitive living conditions, crowding and frequently lack of proper nutrition, tuberculosis was a busy, insidious and inexorable foe to our pioneer people. Typhoid fever, possibly due to the impossibility of recognizing carriers, and lack of hygienic care, sporadically took its toll in minor epidemics and was continually present in lesser degree.

Scarlet fever was very virulent in these days, and epidemics regularly swept through the schools. Diphtheria was all too often rampant in the winter months

and would sweep one community after another destroying the lives of many of the young as well as more mature citizens.

In December, 1882, the village of Litchfield had the regulations of the State Board of Health with regard to reporting of contagious diseases published by the newspapers. Presumably this was in line with regulations of the state of Minnesota, and required doctors, heads of families, and hotels to make such report locally. The *News Ledger* of February 21, 1884, makes this statement: "Ottertail county contributed 415 deaths from diphtheria last year."

The *Litchfield Independent* of May 21, 1887, states: "Schools in the Bonniwell and Bromley Districts are closed on account of diphtheria." And in the *News Ledger* of May 19, 1887: "**Dr. F. E. Bissell** as H. O. reported on diphtheria to the village council, excerpts as follows: 'In this locality, within a stone's throw, there are now five cases of malignant diphtheria, two others already fatal and more to follow.' "

In 1878 the *News Ledger* of November 1 has this to offer: "Diphtheria is having a little run in this place and we (the editor, Mr. Daggett) had a tussle with it the first of the week."

News Ledger, April 8, 1880: "There were fifty cases of scarlet fever reported in 1880. The *News Ledger* for January 8, 1879, lists 349 births for 1878 and causes of deaths as follows :131 deaths—twenty-four diphtheria, twelve consumption, seven convulsions, six accident, five typhoid fever, five scarlet fever, four lung fever, and the rest miscellaneous or unlisted.

A glance at one of the county reports made in February, 1888, on vital statistics is instructive. In 1887 there were 333 births and 127 deaths. Causes of death were: diphtheria seventeen (probably more, as croup was given as cause in three others), consumption nine, typhoid fever nine, inflammation of bowels seven (appendicitis?), lung fever six.

Mumps, whooping cough, and measles always contributed to the morbidity of the population but were seldom mentioned in the newspapers.

I have been unable to find much information on the prevalence of smallpox, but in the *News Ledger* of December 9, 1881, this item occurs: "Children are to be excluded from school if not vaccinated."

In the *News Ledger* of August 11, 1881, we find this: "No more smallpox patients need apply, as the residence created for their convenience was demolished by the storm last Tuesday."

A news item quoted to me by Dr. Rosenthal of St. Paul states that: "Dr. Bissel of Litchfield was ordered to do a lot of vaccinating last winter which he did, and his bill was allowed. Later an appeal was sustained by the District Court, so he goes without his pay."

Again I am indebted to Dr. Rosenthal for the following: "In 1899-1901 there was a terrific smallpox epidemic over much of the United States. Prior to October 1, 1899 (the general outbreak of the epidemic in Minnesota), at least one case was imported to Willmar. This case was found in full bloom at the railway station in Willmar on September 16, 1899, and apparently was infected in a hospital in Great Falls, Montana. He was broken out in Great Falls but was not diagnosed correctly and was permitted to leave.

"He supposedly was advised by the attending doctor to keep away from physicians because his condition resembled smallpox and he might be placed in a 'pest house.' Montana physicians at that time were disputing about an eruptive disease which some were quarantining and some not."

In the December 21, 1881, *News Ledger*: "The smallpox scare is subsiding somewhat in this locality."

In the *News Ledger* of January 28, 1882: 'The National Board of Health has declared smallpox epidemic throughout U. S."

The *News Ledger* of April 3, 1873, states: "It has cost the town of Hutchinson $250 to take care of its smallpox cases the past year."

Evidentally the localities were more eager to discuss epidemics in other localities than in their own, but smallpox must have been sporadic throughout the nation in these years. As a boy, I remember the common sight of smallpox marked faces much more frequently than it is seen now, and well do I remember the two-week illness resulting from my first vaccination. **Dr. J. W. Robertson** presented a paper in 1901 to the Crow River Medical Society on the use of glycerinated smallpox vaccine. Previously, the serum from vaccination pustules had to be inoculated directly with resultant secondary infections of no mean degree.

Other hazards troubled these citizens due to their hard work and lack of relaxation. Some interesting notes are uncovered in the *Litchfield News Ledger:*

June 11, 1872—"An Institution That Is Full"

"August Freburg of Swede Grove has been adjudged an insane person needing hospital treatment, but the following letter to Judge Howell shows that it is impossible for the case to be treated at the State Hospital.

'Minnesota State Hospital for the Insane
St. Peter, Minnesota
June 8, 1872

'Judge C. B. Howell
'Dear Sir:

" 'Yours came to hand last evening. Our house is more than full and the trustees at their meeting next week will probably publish the fact that no more can be admitted until more accommodations can be provided. We have fifty more patients now than can be properly cared for by present arrangements. If I had one from your county suitable to return, I would exchange with you, but I do not think there is such a case from your county just now.

Yours truly,
C. K. Bartlett, Supt.' "

(The information suggests the early inadequacy of mental hospital facilities.)

The early settlers also were afflicted with other difficulties. The newspapers recall frost as of June 7, 1885, and also freezing on August 13 of 1885, while that year recorded the hottest July known to Minnesota. Hailstorms were frequent, and still are, but usually of small areas. Cyclones also appeared as they still do.

Wheat prices particularly in 1873, 1874 and 1875 were $.76 per bushel, and the railroads were apparently charging exorbitant prices to carry the wheat to Chicago. The discussion reached such a degree that in 1885, farmers organized in many areas in the county and built their own cooperative elevators. This maneuver succeeded very well in procuring a fair price for the grain and a fair rate for its shipment, and freed them of dependence upon prices set by millers.

In 1887 cinch bugs worked havoc among the crops, and in June 22 of that year a killing frost again ventured into the north half of the county. In 1899 small grain rust produced a great deficit in the usual yields.

However, at this time, R.F.D. became an established service to our farmers, and telephone lines began to be erected. The automobile and tractor were soon to follow.

A city water tower and electric lights were already establishd in Litchfield, the county seat, in 1890, and a new court house had been erected in 1885.

Stagecoaches radiating from Litchfield in all directions were on regular schedules during most of these years to furnish passage and communication by post.

This note in the *News Ledger* of November 28, 1872, I find impossible to suppress: "The *Alexandria Post* is jubilant over the arrival of a 12½ pound baby in that town. (Standard weight in Meeker County.)"

Also in the *News Ledger* of December 11, 1873: "Effects of the 'Panic' on the People." "Doc. Bissell hopes to be able to prescribe a remedy soon that will set everybody up on pep again. He calls the disease business 'Prostration.'"

Unquestionably, 1873 was a real depression for the county. Many local businesses failed, and economically the residents did not recover from the "doldrums" for ten years.

The Crow River Medical Society was the first local medical organization and was rather loosely drawn up to include Meeker, Kandiyohi, and probably Stearns counties. McLeod county and Renville county men were numbered among the early members, and anyone in the vicinity was cordially invited, apparently much as the Northern and Southern Medical Societies operate as of today.

The *Litchfield News Ledger,* September 24, 1874, carries this:

"Medical Association"

"A meeting was held on Thursday, September 17th at the office of Drs. Kennedy and Gibbs for the purpose of organizing a medical society. **Dr. N. H. Knowles, St. Cloud,** was elected chairman and Dr. Kee Wakefield, secretary. It was decided that the name of this society should be Crow River Medical Society. **Dr. V. P. Kennedy** was appointed to select a constitution and by laws and report at next meeting. The code of either the American Medical Associations (Homeopath or Allopath) was adopted for the regulation of this society. Officers for permanent organization were elected as follows:

Pres.: **Dr. N. H. Knowles**
Vice-pres.: **Dr. E. Hildebrandt**
Treas.: **Dr. E. S. Gibbs**
Secy.: **Dr. Kee Wakefield**

"Meeting adjourned until the first Thursday in November at 2 p.m.

KEE WAKEFIELD, Secretary"

This society flourished well until after the turn of the century, and good scientific papers were presented frequently and the meetings were distributed about to take advantage of the local hospitality and varying facilities. Lake Koronis, Green Lake, Lake Ripley, and probably many other areas were used, and wives were included to increase the sociability.

Certainly, in addition to those men named in the original group of officers, should be added the names of **Dr. Archibald** of Atwater, **Dr. McCollom** of Dassel, **Dr. Sherwood** of Kimball, **Dr. J. C. Jacobs** of Willmar, **Dr. Pilon** of Paynesville, **Dr. Newman** of New London, and **Drs. J. W. Robertson, F. E. Bissel, W. E. Chapman, George Weisel, J. J. Donovan, and Henry E. Cassell** of Litchfield. There were, of course, many other members before and after 1900, including St. Cloud and Benson men who will be more fittingly discussed in historical papers from other counties.

However, interest died down and, like the old soldiers, the society faded away. A reorganization took place in the 1920's with Kandiyohi, Swift, and Meeker counties banding together for the purpose of obtaining better scientific programs, but Meeker county retained its individual vote in State House of Delegates at the annual Minnesota Medical Association meetings. Some of the original social activities continue to permeate the present group in that each county entertains the society at least once a year.

Undoubtedly, most of these men were of the so-called allopathic school of medicine, which today is known as the regular school. Homeopathic schools graduated many fine physicians in those days and indeed had their own national association. It was a familiar question in the farm homes in that century to ask for a homeopath or an allopath to call, depending on what mother liked. The homeopaths gave small doses of their drugs, compounded before your eyes and largely put up in paper folders. Their idea was to assist nature with small doses, chiefly of quinine and calomel which were to be taken at very specific intervals. Needless to say, the compounding of these remedies in your very home entranced the patients. The allopaths did as they do now. Antibiotics, as we recognize them now, were entirely unheard of, but kitchen table surgery was common and surprisingly successful.

The Mayo boys, "Will and Charlie," had discovered that an appendix should be removed and could be and, admonished by their father, had established a hospital in Rochester, Minnesota, given up to healing the sick. They traveled far and near to learn as much as they could and gave freely of their experiences and judgments to our own physicians who attended their clinics.

Our early physicians traveled principally by horse drawn vehicles or on horse back through rain and snow, in fair or foul weather, to deliver this service to the well deserving pioneers. In these early days the doctor was expected to come to the home, primarily, rather than to examine the patient at his office.

In epidemics of influenza, or "epizootic" as it may have been called, he was driven by his driver "south of town" in the forenoon, making calls in that neighborhood. In the afternoon with a fresh team and probably a fresh driver he drove "north of town." The people residing in the community always had hot coffee and food for Doctor "X" and, even though he was not their usual physician, asked him to do what he could for "Auntie Johnson—as long as he was in the neighborhood." Many times they drove in to get him themselves. Perhaps, if a baby was due, he and his driver would put up for the night until the new Minnesotan arrived.

Of course, the usual procedure at childbirth was for the midwife to arrive a week or two in advance of the event and remain and attend the entire family for a period of three or four weeks. The doctor was not usually needed unless complications developed.

Charlatans of all types in the art of healing were rampant in these early years. One could call himself doctor by the simple expedient of growing a beard and wearing eye glasses. Itinerant "doctors" arrived at the local hostels for a day or a week and gave to our pioneers the advantages (?) of their knowledge and skill. Witness a few items in the local newspapers.

News Ledger, June 11, 1874—(a card)—"Mrs. L. A. Mudgett respectfully informs the ladies of Litchfield that she will attend to those who may wish the professional aid of one of their own sex. Mrs. Mudgett, having received regular medical education and been in active practice for the past eighteen years, believes she is able to administer remedies on scientific principles and in the most complicated forms of disease. From the recommendations Mrs. M. carries with her in all parts, we should judge her well qualified in her profession.

Rooms at Ripley House"

News Ledger, January 21, 1871—"Dr. O. Nelson, formerly of Minneapolis, is stopping this winter at William Porters in Darwin. His specialty is the eye, and he has been treating a young daughter of Mr. Porter's who has been ailing in her left eye for five years and nearly blind for the past three years. She has already received much benefit from his treatment and her friends are sanguine that her sight will be restored to her again."

News Ledger, February 20, 1879—"Dr. Weinsma (local physician) had published a long list of prescriptions and directions for treating common cold which should have kept both the patients and druggists busy."

Sometimes the Regulars fought back.

News Ledger, October 18, 1876—(courtesy card) "Dr. S. L. Barr: Special attention given to diseases of the ear, skin, and those peculiar to women."

News Ledger, February 14, 1877—"Dr. Kennedy assisted by Dr. Barr one day last week performed a difficult piece of surgery. A German lady of this county had for the past year been suffering from the formation of a cancer on her left breast, and Dr. Kennedy and Dr. Barr took the same out root and branch. It was nearly the size of a goose egg and almost as hard as bone. The lady is now in a fair way of an entire cure."

News Ledger, May 29, 1879—"To the people of Litchfield and county: A few days last week a Dr. Yarnall was among you claiming to treat and cure chronic diseases of both male and female. As far as the doctor is concerned, I have nothing to say for or against him, but will ask those who are afflicted with any chronic disease, why is it they seek the aid of one whom they know nothing of and who perhaps they will never see again in preference to their home physicians, who are equally as well able to treat any such cases upon a much smaller sum of money than those who travel through the country, not for YOUR welfare but for the benefit, principally, of THEIR pockets.

"Your home physicians can treat your case equally as well, and the benefit to you is still greater for this reason: you can consult them in regard to your case every day in the week if necessary, and without extra charge. I will not guarantee a cure in any chronic case; for no physician, if he knows his business, can or will say positively, that such and such a case can be cured; but will give you the benefit of the treatment attained from scientific work on disease, be it acute or chronic. Patronize home talent and save your money.

Respectfully,
S. L. Barr, M.D."

News Ledger, April 23, 1882—"To all concerned: I will guarantee to all patients that their bill for medicines during sickness shall not exceed the sum of $3.00. All in excess of such sum will be furnished FREE. I receive no commission on prescriptions.

Dr. S. L. Barr."

News Ledger, May 4, 1882—

"Fees for Medical Attendance

Visits in town per day	$ 1.50
Visits in country $.50 per mile one way and for visit	1.50
Obstetrical including care of patient till up	10.00
Office prescription	.50
Night calls extra per visit	.50

"Parties in country furnishing their own team will be charged mileage only.

"Chronic diseases of all kind treated, medicine furnished.

Dr. S. L. Barr."

News Ledger—"A Mrs. McGannon of Litchfield is treating a skin cancer for a G. France with a fair prospect of cure."

News Ledger, February 19, 1874—"A. G. Whittier showed his countenance in this village last Saturday and tarried until Monday. He wanders through the land with a pair of horses and a commission from Dr. J. C. Ayer to alleviate human suffering and to restore hair to its prospective freshness and color again. Whittier is a true philanthropist and can probably sell more Cherry Pectoral than any other living man. As for his hair dye, he is just old Persimmons."

The *Independent,* August 8, 1885—

"J. H. Bacon, Dentist
Marshall Ave. opposite Town Hall

"I am ready to pull your tooth and then take your picture. Have had years of experience in both dentistry and photography. Give me a call."

News Ledger, May 6, 1880—"Dr. E. H. Orene, clairvoyant and magnetic physician, will be in Litchfield on Tuesday and Wednesday, May 11 and 12. He will make examinations and give medical or magnetic treatments as cases may require. All chronic cases successfully treated. Those requiring examinations should call early, as I will remain but two days. Can be consulted at Exchange Hotel."

However, the doctors themselves could create a little disturbance, as witness these columns appearing in the local papers:

News Ledger, July 12, 1877—"Owing to a card C. J. Erickson of Swede Grove (Grove City) wrote in our last issue, the physicians of this place became anxious to ascertain the

facts relative to his membership in the State Medical Society and wrote to the faculty concerning the same. The following is the answer received:

'Minn. State Medical Society
Secretary's Office
July 7, 1877

'V. P. Kennedy, M.D.
'Dear Sir:

I have examined the record of 1869 and 70 in accordance with your request. I fail to find in them any mention of C. J. Erickson. No such name appears either in the minutes, among the signatures to the constitution, or in the printed list of members.

Very truly yours,
C. H. Boardman'

"The above is published at the request of physicians of this place."

News Ledger, July 11, 1877—"Notice!"

"Owing to a misunderstanding, I am informed that a few people of Meeker county are under the impression that I am not what I claim to be: viz, a regular, practicing physician. To prove that I am a practicing physician with full rights invested in me by the State Medical Society, I publish my diploma signed by the officers of that association in 1869. I do this not through ill will toward anyone but simply to place myself and those who would injure me in a right light before the people.

Respectfully,
C. J. Erickson."

News Ledger, July 26, 1877—"Willing that all men shall have full justice shown them in every particular, and unwilling intentionally to wrong any man, I hereby certify that I have examined a certificate from Dr. John H. Murphy of St. Paul stating that he was chairman of the board of censors for the State Medical Society at its meeting in the year 1869 in the city of St. Paul and that said body did examine and pass for membership **Dr. C. J. Erickson** now of Swede Grove and that the State Medical Society did grant him a certificate of membership. I believe said certificate to be genuine. The letter of Dr. Boardman, the present secretary of the society, still remains unexplained.

"By that letter, I was led into the doing of an injustice, and I am glad to make amends thereof. As the doctor claims the protection of the State Medical Society and professes to be governed by its rules, I hope in the future, he will be a little more careful to observe its code of ethics in his intercourse with its members. V. P. Kennedy, M.D."

Dr. V. P. Kennedy.—Apparently Dr. Kennedy represented the doctors in Litchfield at this time. There could be no better time than this to introduce his name into our story. You have already witnessed his education, honesty, ability and charm in the above newspaper battle.

The existing photographs show him as a spare elderly gentleman of kindly mien surrounded by a good-sized family on the front porch of a large two-story frame dwelling. A bicycle is to his left. The picture was probably taken in South Dakota. The doctor became somewhat peripatetic in his more prosperous years and divided his time between Ordway, South Dakota, and Litchfield, Minnesota, with trips to Washington Territory, Washington, D. C., Amarillo, Texas, and Florida as interesting side lights.

He worked hard and well as a doctor and was beloved for his services, which had been rendered under the greatest natural vicissitudes of the times. He had prospered at it, and in later years spent increasing amounts of his energies and talents in politics and exploitation of newly developed agricultural territories.

Dr. Kennedy was born in Butler County, Pennsylvania, July 11, 1824, and was given the name Vincent Pellett Kennedy. His father was Martin Kennedy, his mother Elinor Pellett. He was a very energetic type and rightfully found an outlet for his energies in our county.

At five years of age he and his parents moved to Indiana where he was educated locally. At twenty-one years of age he went on to Asbury University at Green Castle, Indiana, for two years. From there he matriculated at Rockville, Indiana. Here

he became imbued with the idea of becoming a physician, and a year later we find him in Louisville, Kentucky. He entered Rush Medical College in Chicago and graduated there in 1851. He did postgraduate work there again in 1875, and received an additional degree from Bellevue Hospital College of New York in the same year. He was a licensed pharmacist as well as an M.D. Little is known of his whereabouts from 1851 until 1856 when he entered Meeker county. He had been pretty much on his own, as his father died when he was ten years of age and his uncle had given him a home on his farm in Indiana. Apparently, he earned his own education.

He pre-empted Dr. Ripley's claim on the banks of Cedar Lake in June, 1856, making the usual down payment and building a small dwelling thereon. He raised a few potatoes that year, but the Indians robbed him of his crop. In 1860 we find him elected to the Minnesota State Legislature and re-elected again in 1861. He accordingly spent most of his time in St. Paul, though retaining the farm in Meeker county. In 1862 he enlisted as surgeon to the 5th Minnesota Regiment and served with them until mustered out at Montgomery, Alabama, in May, 1865.

He spent this summer on his farm, and in the fall he received an appointment as physician to the Chippewa Indians on their reservation at Red Lake, Minnesota. Here he remained from November, 1865, until March, 1867, when he returned to Meeker county.

He bought the grist mill at Cedar Mills and ran that personally until 1869. At this time the railroad had been built through the county and Litchfield had been incorporated as a village, and the county seat had been moved to Litchfield from Forest City. Dr. Kennedy opened offices in the new village and practiced actively for the next eleven years.

In 1880 he went to Brown County, Dakota Territory, and filed on a claim which he continued to hold, though returning to Litchfield for most of the time until 1883. At that time he established a drug store and practiced his profession at Ordway, South Dakota. He was also postmaster for the town.

In 1885 he was elected to the Dakota senate and was actively interested in shaping territorial legislation including the site for the state capitol of South Dakota. In the spring of 1886 his family returned to Litchfield, and the doctor was back and forth between the two points but eventually remained in Litchfield.

The doctor was primarily a Republican in politics but at one time "jumped the fence" and came in for considerable newspaper castigation at the time. He was an active member of the G.A.R. In 1887 he was elected Medical Director for the Department of Minnesota and served one year. He joined Golden Fleece Lodge No. 49 A.F. and A.M. in Litchfield during the autumn of 1875. He was prominently identified with the Minnesota State Medical Association and had received considerably more education than most of his confreres at that time. His skill and integrity in his practice were unquestioned, and he had a large group of loyal followers. In later years he devoted most of his time to his extensive farming interests, having 360 acres in our county all improved and 640 in Dakota with 400 under the plow.

He was listed in the Official Registry of Physicians in Minnesota from 1883 until 1890. He was licensed by the Statute of Exemptions, having been engaged in active practice for many years before official registration was required.

(To be continued in the October issue)

MINNESOTA BLUE SHIELD-BLUE CROSS

Interest has been shown by a number of doctors in the names and locations of the Blue Shield corporate members. It has also been suggested that a list of them be published, and for that reason the following information has been prepared.

Following the passage of the Blue Shield enabling law by the legislature in 1945, the Council and House of Delegates agreed that the corporate body of Blue Shield would consist of twenty-one members, two from each councilor district and three-at-large. Until January 1, 1956, the number of corporate members did not exceed twenty-one. Since January 1, 1956, twenty-one additional corporate members have been elected, although the passing of Dr. Sogge in July, 1957, means that the present membership, as of June 1, 1958, is forty-one members. They are as follows:

Dr. C. M. Bagley, Duluth; Dr. N. H. Baker, Fergus Falls; Dr. L. A. Barney, Duluth; Dr. E. C. Bayley, Lake City; Dr. W. C. Chambers, Blue Earth; Dr. R. D. Courteau, Onamia; Dr. R. R. Cranmer, Minneapolis; Dr. H. F. Flanagan, St. Paul; Dr. A. Fritsche, New Ulm; Dr. W. H. Halloran, Jackson; Dr. E. M. Hammes, St. Paul; Dr. H. P. Hinderaker, Bird Island; Dr. P. G. Hoeper, Mankato; Dr. V. M. Johnson, Dawson; Dr. E. H. Juers, Red Wing; Dr. J. F. Karn, Ortonville; Dr. E. J. Kaufman, Appleton; Dr. G. C. Kimmel, Minneapolis; Dr. M. E. Knapp, Minneapolis; Dr. P. C. Leck, Austin; Dr. M. E. Lenander, St. Peter; Dr. A. J. Lenarz, Browerville; Dr. J. G. Lohmann, Pipestone; Dr. C. A. McKinlay, Minneapolis; Dr. M. J. McKenna, Grand Rapids; Dr. D. A. MacDonald, Minneapolis; Dr. F. H. Magney, Duluth; Dr. J. P. Medelman, St. Paul; Dr. C. W. Moberg, Detroit Lakes; Dr. G. J. Mouritisen, Fergus Falls; Dr. C. L. Oppegaard, Crookston; Dr. B. F. Pearson, Shakopee; Dr. D. L. Sherman, Luverne; Dr. E. J. Simons, Edina; Dr. P. M. Smith, Lake Crystal; Dr. O. I. Sohlberg, St. Paul; Dr. L. E. Steiner, Albert Lea; Dr. A. M. Watson, Royalton; Dr. W. T. Wenner, St. Cloud; Dr. W. W. Will, Bertha and Dr. W. W. Yaeger, Marshall.

The amount of benefits provided for hospitalized Blue Cross members reached an all time high for the first four months of 1958, as compared to the same period in 1957.

Analysis of the reasons for hospitalization reveals that the two nondisease categories, obstetrical care and accidental injuries, accounted for nearly 30 per cent of all cases paid during this period.

During the first four months of 1958, nearly 10,800 Blue Cross mothers were hospitalized for maternity care or conditions related to pregnancy. Blue Cross maternity cases averaged 4.7 days of care per case. Blue Cross maternity benefits exceeded the one and one-half million dollar mark. Compared to the same period of the previous year, there was a 4 per cent increase in frequency of occurrence, a one-tenth of a day drop in length of hospital stay and over $200,000 increase in benefits. Obstetrical care was the second leading reason of hospital care incurred by Blue Cross subscribers during the first four months, both in 1957 and 1958.

Accidental injuries and poisonings incurred by 10,600 subscribers during the four-month period of 1958 was the third leading cause of hospitalization. Compared to the same period of 1957, the rate of hospitalization due to accidents has increased 5.6 per cent. Every twenty minutes a Blue Cross subscriber receives hospital care for an accidental injury or poisoning.

More than 50 per cent of all accidents to Minnesota Blue Cross members resulted in lacerations, fractures or sprains. During the first four months of 1958, lacerations were the result of 2,558 accidents or 24 per cent of the total incurred by subscribers, fractures resulted from 2,030 accidents or 19 per cent of the total, and sprains resulted from 1,525 accidents or 15 per cent of the total.

The leading cause of hospitalization incurred by subscribers during the first four months of 1958 was respiratory illnesses; representing 16.4 per cent of all cases paid. This period of every year is inclined to show a high frequency rate for respiratory diseases. However, compared to the same period of 1957, the number of Blue Cross subscribers hospitalized because of respiratory diseases shows a 2.5 per cent increase.

Diseases of the digestive system ranked fourth as one of the leading reasons of hospitalization of Blue Cross members during the first four months of 1958. Diseases in this category represented 14.1 per cent of all cases paid and exceeded the rate of incurrence of the previous year by 5.5 per cent.

Together with accidental injuries, the increase in frequency of subscribers hospitalized for digestive diseases made up one-third of the increase in overall usage of Blue Cross benefits as compared to the same period of the preceding year.

105TH ANNUAL MEETING HIGHLIGHTS

MINNESOTA STATE MEDICAL ASSOCIATION

Attendance Records

According to official attendance figures, a total of 3,696 persons attended the 105th annual meeting of the Minnesota State Medical Association.

The number of doctors who attended this year's meeting was 1,620; medical students, 233; nurses, dietitians, technicians, social workers and medical secretaries, 204; scientific exhibitors, 214; commercial exhibitors, 583; and Woman's Auxiliary, 343. Guests, including clinic managers, State Board of Health personnel, state institution managers, superintendents of hospitals, dentists, pharmacists and research personnel totaled 499.

New Officers Elected

Dr. Carl B. Drake of St. Paul, was named president-elect of the Minnesota State Medical Association at the closing business session of the House of Delegates held in conjunction with the 105th annual meeting of the group, May 22-24 in Minneapolis. He will take office January 1, 1959. A native of St. Paul, Dr. Drake is a graduate of the University of Minnesota School of Medicine.

In 1919, he was named editor of Minnesota Medicine, a post which he held until 1953.

Prior to 1925, Dr. Drake served for three years as executive secretary of the Minnesota State Medical Association.

He served as president of the Ramsey County Medical Society in 1942, and in 1953 he was the recipient of the Distinguished Service Award.

Dr. Drake is an internist and maintains his practice in the Lowry Medical Arts Building.

Other officers elected include: E. R. Sather, Alexandria, first vice president; Malcolm McCannel, Minneapolis, second vice president; B. B. Souster, St. Paul, secretary; Karl W. Anderson, Minneapolis, treasurer; H. M. Carryer, Rochester, Speaker of the House of Delegates; R. P. Buckley, Duluth, vice speaker; P. E. Hermanson, Hendricks, J. P. Medelman, St. Paul, and W. W. Will, Bertha, district councilors. R. L. J. Kennedy, Rochester, and A. O. Swenson, Duluth, were selected delegates to the American Medical Association with R. H. Wilson, Winona, and Clarence Jacobson, Chisholm, as alternates.

Distinguished Service Award

Dr. Ernest H. Hammes, a St. Paul physician for fifty-one years, was awarded the 1958 Distinguished Service Award of the Minnesota State Medical Association.

Dr. Hammes is a neurologist and psychiatrist who taught at the University of Minnesota Medical School for thirty-nine years. He is now professor emeritus of nervous and mental diseases.

The award is in recognition of service to the association and medicine in Minnesota.

Fifty Club Members Honored

In recognition of faithful service of fifty years in the honorable practice of medicine in Minnesota, seventeen Minnesota physicians received special citations and awards at the annual banquet of the Minnesota State Medical Association.

The seventeen physicians included in this group are: Drs. Donald C. Balfour, Rochester; E. T. Bell, A. C. Lindberg and Kenneth W. Wilder of Minneapolis; Rolland A. Bock, Edward V. Goltz, and Charles N. Hensel of St. Paul; Elmer A. Arnold, Adrian; John C. Brown, Los Gatos, California; Frank W. Calhoun, Albert Lea; Joseph S. Collins, Wabasha; George C. H. Ernest, St. Petersburg, Florida; Richard B. Girvin, Des Peres, Missouri; Einer Wesley Johnson, Bemidji; Ola A. Kabrick, St. Peter; John J. McGroarty, Easton; and Theodore S. Paulson, Fergus Falls.

Mr. Rosell Honored

A citation of distinguished service was presented to Mr. R. R. Rosell at the annual banquet in recognition for his thirty-two years of devoted service as executive secretary and field secretary of the Minnesota State Medical Association.

The presentation was made by Dr. C. L. Oppegaard, chairman of the council, on behalf of the association.

Mr. Rosell joined the staff of the association in 1926 as field secretary. He spent 1930 to 1935 with the American Medical Association in Chicago.

His successor will be Harold Brunn, now assistant secretary.

Scientific Exhibitors Receive Award

Three Minneapolis physicians were named recipients of the 1958 Southern Minnesota Medical Association Award for the best scientific exhibit displayed at the annual meeting. The first place winners were Drs. E. A. Webb, B. A. Smith and W. E. Price, for their exhibit on "Hematuria."

The judges were Dr. James W. Reagan of Western Reserve University, Cleveland, Ohio; Dr. Harry Ungerleider, Director of Medical Research, Equitable Life Assurance Society, New York, New York; and Dr. John W. Gridley of Arlington, Minnesota.

Meetings and Announcements

MEDICAL MEETINGS

State

Northern Minnesota Medical Association, annual meeting, Detroit Lakes, September 5 and 6, 1958.

School Health and Safety Workshop, sponsored by Minnesota Department of Education, Minnesota Department of Health and Minnesota Tuberculosis and Health Association, seventh annual session, Camp Lake Hubert near Brainerd, Minnesota, August 17 to 22, 1958.

NATIONAL

Academy of Psychosomatic Medicine fifth annual meeting, Park Sheraton Hotel, New York City, October 9-11, 1958.

American Congress of Physical Medicine and Rehabilitation, 36th annual scientific and clinical session, Bellevue-Stratford Hotel, Philadelphia, August 24-29, 1958.

American Institute of Ultrasonics in Medicine, interim meeting, Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, August 23, 1958.

Fifth Annual Conference of Mental Health Representatives of the State Medical Associations sponsored by the AMA Council on Mental Health, November 21 and 22, 1958, Drake Hotel, Chicago.

Gerontological Society, Inc., Bellevue Stratford Hotel, eleventh annual scientific meeting, Philadelphia, Pennsylvania, November 6, 7, and 8, 1958.

National Society for Crippled Children and Adults, 1958 convention, November 16-20, Statler Hotel, Dallas, Texas.

One-day course in Cardiac Resuscitation, Emory University School of Medicine, Atlanta, Georgia, October 3, 1958. Write Postgraduate Education, Emory University School of Medicine, 69 Butler Street, SE, Atlanta 3, Georgia, for further information.

Second Annual Postgraduate Course on "The Prevention and Management of Athletic Injuries," University of Colorado Medical Center, Denver 20, Colorado, August 25, 26, 27, 1958.

INTERNATIONAL

Fifth International Congress on Diseases of the Chest, sponsored by American College of Chest Physicians, Tokyo, Japan. September 7-11, 1958.

Israel Medical Association, fourth world assembly, August 12-24, Tel Aviv, Jerusalem, and Haifa.

Third International Congress of Allergy, sponsored by International Association of Allergology and French Allergy, Association, Paris, France, October 19-26, 1958.

OTOLARYNGOLOGY ASSEMBLY

The Department of Otolaryngology, University of Illinois College of Medicine, announces its Annual Assembly in Otolaryngology from September 29 through October 5, 1958. The Assembly will consist of an intensive series of lectures and panels concerning advancements in otolaryngology, and evening sessions devoted to surgical anatomy of the head and neck and histopathology of the ear, nose and throat.

Interested physicians should write direct to the Department of Otolaryngology, 1853 West Polk Street, Chicago 12, Illinois.

UROLOGY AWARDS

The American Urological Association offers an annual award of $1,000 (first prize of $500, second prize $300 and third prize $200) for essays on the result of some clinical or laboratory research in urology. Competition is limited to urologists who have been graduated not more than ten years, and to hospital interns and residents doing research work in urology.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Chalfonte-Haddon Hall, Atlantic City, New Jersey, April 20-23, 1959.

For full particulars, write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1958.

CAMP FOR DIABETIC CHILDREN

The Twin City Diabetes Association is sponsoring a camp for diabetic children, ages seven to seventeen, from August 10 through 17. The camp will be at Camp Legionville, Brainerd. Adequate supervision of all activities will be insured by a full-time pediatrician, nurse and dietitian for problems relating to diabetes and by competent counsellors for full camp activities.

The Twin City Diabetes Association wishes to publicize the camp to all physicians in Minnesota so they may encourage their young diabetic patients to attend the camp. Information about the camp may be obtained from Mrs. Mannie Guggenheim, Lay Society Secretary, 5225 Minnetonka Blvd., Minneapolis. Telephone: WAlnut 6-1486.

COURSE IN POSTGRADUATE GASTROENTEROLOGY

The American College of Gastroenterology announces that its annual course in Postgraduate Gastroenterology will be given at the Jung Hotel in New Orleans, La., on October 23, 24, 25, 1958.

The subject matter to be covered in the course, from a medical as well as surgical viewpoint, will be essentially, the advances in diagnosis and treatment of gastrointestinal diseases and a comprehensive discussion of diseases of the mouth, esophagus, stomach, pancreas, spleen, liver and gall bladder, colon and rectum.

For further information and enrollment, write to the American College of Gastroenterology. 33 West 60th St., New York 23, N. Y.

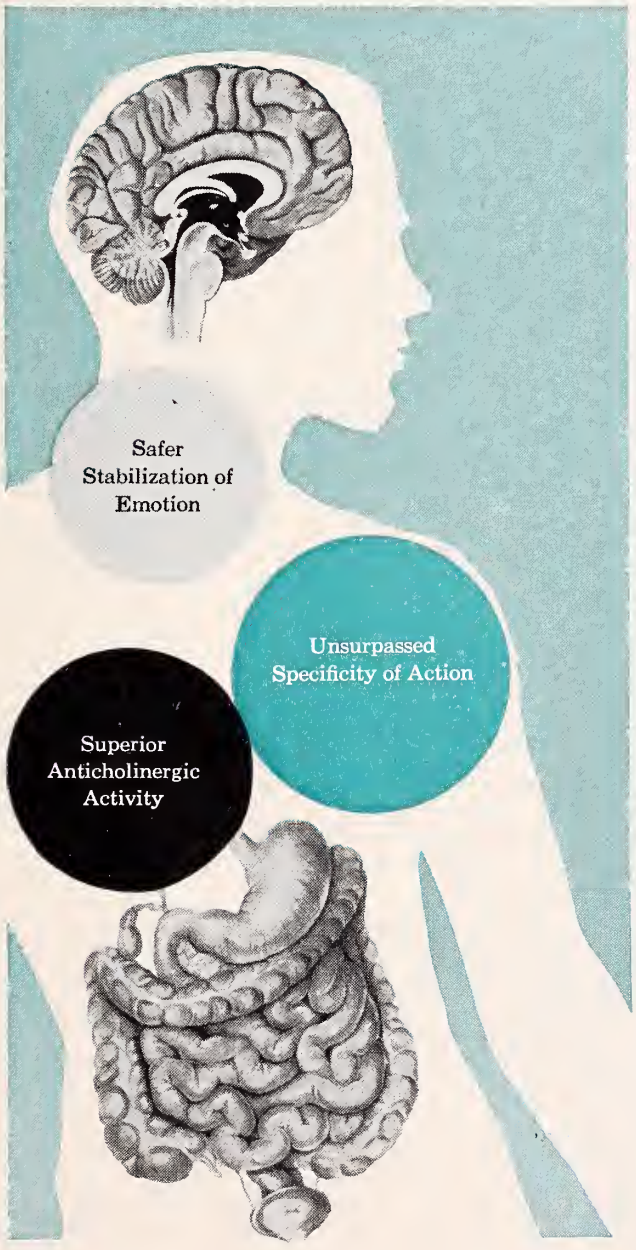
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PRO-BANTHINE WITH DARTAL offers you a new, specific and reliable control of visceral motor disorders, especially when these disorders are induced or aggravated by psychic tensions or anxiety.

Pro-Banthine has won wide clinical acceptance as the most effective drug for controlling gastrointestinal hypermotility and hypersecretion.

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The combination of each drug in fully effective doses in Pro-Banthine with Dartal gives a new means of approach to the medical management of functional gastrointestinal disorders mediated by the parasympathetic nervous system.

Specific Clinical Applications: Functional gastrointestinal disturbances, gastritis, pylorospasm, peptic ulcer, spastic colon (irritable bowel), biliary dyskinesia.

Dosage: One tablet three times a day.

Availability: Aqua-colored tablets containing 15 mg. of Pro-Banthine (brand of propantheline bromide) and 5 mg. of Dartal (brand of thiopropazate dihydrochloride).

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Public Health

DULUTH BRANCH LABORATORY TRANSFERRED

At its meeting of May 22, the State Board of Health voted to close its Duluth and St. Louis County Branch Laboratory (located at 310 Builders Exchange Building, Duluth) by July 1, 1958. All services offered by the Branch Laboratory will be transferred to the Minnesota Department of Health's medical laboratories in Minneapolis. We believe that this change will promote greater efficiency since the laboratory services in the Duluth laboratory were limited and many specimens had to be sent to Minneapolis.

The decision to close the Branch Laboratory was based on the fact that (1) services can be rendered as effectively and more efficiently from the Minneapolis Laboratory which already serves all of the state and supplemented the services for the city of Duluth and St. Louis County, (2) mail service between Duluth and Minneapolis is just as rapid and in most instances faster than for many other parts of the state, and (3) the death of Mr. Harold Hoff, bacteriologist-in-charge of the Branch Laboratory since 1939, created a vacancy which would have been most difficult to fill with a suitable person.

To implement this transfer of services, the Division of Medical Laboratories requests that physicians, clinics, and hospital laboratories return all unused containers bearing the Duluth and St. Louis County Branch Laboratory return label to the Minnesota Department of Health, Division of Medical Laboratories, University Campus, Minneapolis 14, Minn., for exchange for properly labeled containers. The outside of the containers should be marked "not used." If replacement is desired, a note giving the name and address of the requestor should accompany the returned containers.

If there are any questions regarding submission of specimens or laboratory services, the Department of Health will be most pleased to answer them. Kindly address queries to: Henry Bauer, Ph.D., Director, Division of Medical Laboratories, Minnesota Department of Health, University Campus, Minneapolis 14, Minnesota.

Thanks most sincerely for your co-operation.

R. N. Barr. M.D.
Secretary and Executive Officer
Minnesota State Board of Health

Steady increase in population, production, and a higher standard of living are the reasons why water is becoming scarce in almost every populous section of the United States. Today, the country uses about 261 billion gallons of water daily. By 1975, it is estimated that use will soar to 453 billion gallons daily.—*Christmas Seal Health News.*

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Woman's Auxiliary

NEW STATE PRESIDENT REVIEWS AUXILIARY HISTORY

The installation of Mrs. Reuben F. Erickson, Minneapolis, as 1958-59 state president of the Woman's Auxiliary to the Minnesota State Medical Association took place at the annual luncheon held Friday, May 23, 12:45 p.m. in the Cardinal Room of the Curtis Hotel in Minneapolis.

In her acceptance message, presented at the time of her installation, Mrs. Erickson reviewed the history of the organization. Her address was as follows:

This being a Centennial year for the State of Minnesota, a short review of the history of our auxiliary seems timely. The Auxiliary to the American Medical Association was organized May 26, 1922—thirty-six years ago in St. Louis, Missouri. At that time, Minnesota had three active medical groups—St. Louis County, Ramsey and Hennepin. These three groups organized in Minneapolis, as a state auxiliary, October 13, 1922, five months after the national auxiliary was organized.

At the first national convention held in St. Louis in 1922, there were only twenty-six members registered. Then in 1928, the national meeting was held in Minneapolis and the enrollment was 1,296 members—so you can see how fast we grew.

I would like to remind you that the mother of the present president of the Minnesota State Medical Association was our first state auxiliary president. Mrs. H. B. Sweetser served during the years 1922, 1923 and 1924.

From the ranks of our state presidents, two were honored to become national presidents—Mrs. James Blake of Hopkins, who served in 1933-34 and Mrs. Harold Wahlquist of Minneapolis, who served in 1951-52.

The achievements of our medical auxiliary through the years have proved that the American Medical Association has a powerful ally. We are continually broadening our program of service and always striving to serve the original purpose for which we were organized—to extend the aims of the medical profession through the wives of doctors to other women's groups which look to the advancement in health and education; to assist in entertainment at all medical conventions; to promote sociability among doctors' families so that closer fellowship may exist.

Mrs. Oppegaard, I want to thank you for your guidance and help through this past year. I have enjoyed your fellowship and your enthusiasm, and I was very fortunate to have observed and learned for my year ahead. May our friendship ever grow stronger through the years ahead.

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Now, as your president, I want you to remember that I shall work with you and for you and among you with dedication to the dreams of the pioneers, which are our dreams, too. May we pioneer to extend our aims into our own neighborhoods and even beyond.

I wish to close quoting from the inaugural address of one whom I greatly revere and to whom I must give the credit of my achievement today—one whom I truly miss—Margaret Sheman Wahlquist:

"Your individual worth and individual contributions are most meaningful to me, for it is only through us, as individuals, that the things for which we stand become real. With all of us working together for health, we shall progress."

RECOMMENDATIONS PRESENTED FOR MARGARET SHEMAN WAHLQUIST AWARD

The committee has tried very hard to recommend a memorial which will use the amount of money promised and collected to the very best advantage. The total figure at this time is $639.00 with eighteen counties responding and two personal gifts.

The committee recommends that a Margaret Sheman Wahlquist Award of $100.00 be presented each year to a worthy and deserving graduating nurse from the University of Minnesota who desires to continue her work in a specialty. This award will be presented at the annual Auxiliary luncheon of the state convention.

We know that with the money already promised and received that this award can continue for six years, and there may be others, on knowing the recommendation, who would care to contribute. In doing it this way, it will not be necessary to know the final amount of the fund before setting up the award program.

The Memorial Fund would be administered by a committee of three members to be appointed by the president. This committee, with the approval of the State Medical Association Executive Secretary, would determine the award winner.

Since scholarships start at about $1,000 or $1,200, this committee believes that an annual prize award will best utilize these funds to keep Margaret Wahlquist's name alive. It will be well worth the small amount of effort involved in making the selection of the award winner each year.

We hope that this recommendation for a Margaret Sheman Wahlquist Award will be satisfying to all those who knew and loved Margaret, and who have given so generously.

Mrs. Harold Benjamin
Margaret Sheman Wahlquist
Memorial Committee



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1. Thomas, J. W.: Ann. Allergy 16:128, 1958

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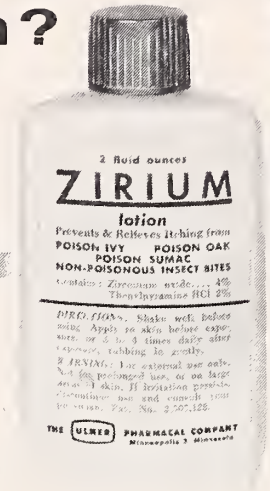
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In Memoriam

DAVID M. BERKMAN

Dr. David M. Berkman, a member of the staff of the Mayo Clinic from 1913 to 1951, and of the Board of Governors of that institution, died at Saint Mary's Hospital in Rochester, Minnesota, May 28, 1958. The cause of death was cerebral hemorrhage caused by arteriosclerosis. He was seventy-two years old.

Dr. Berkman was born in Rochester on May 26, 1886, the son of Gertrude Mayo Berkman and Dr. David Berkman.

He attended the public schools of Rochester and the University of Minnesota, from which he received the degree of bachelor of science in 1909. He then continued his education at the Rush Medical College in Chicago, which awarded him the degree of doctor of medicine in 1912. His internship was served at the Presbyterian Hospital in Chicago in 1912 and 1913, and for five months conducted work in post-mortem examinations at the Cook County Hospital in Chicago.

Dr. Berkman returned to Rochester on November 1, 1913, as a consultant in medicine in the Mayo Clinic. He was a member of the Medical Corps of the U. S. Army in World War I, serving as an officer in Base Hospital 26 in France in 1918 and 1919. He was released to civilian status with the grade of major. In the early years of his service he was associated in general medicine with the late Dr. Christopher Graham, one of the founders of the medical partnership which ultimately became the Mayo Clinic. On May 1, 1919, however, he was appointed head of a section of medicine in the Mayo Clinic, a post he retained until 1946, when he became a senior consultant. He retired from active practice in the Mayo Clinic on July 1, 1951.

Dr. Berkman was a member of the Board of Governors of the Mayo Clinic from 1933 to 1945 and of the Board of Members of the Mayo Association from 1935 to 1951. He was an assistant professor of medicine in the Mayo Foundation, Graduate School, University of Minnesota.

He was one of the early graduate students in the Mayo Foundation, established in 1915, and in 1920 he received from the University of Minnesota the degree of master of science, conferred for his graduate work in the study of diabetic patients requiring surgical operations.

Dr. Berkman was certified as a specialist in internal medicine by the American Board of Internal Medicine, Inc. He was a fellow of the American College of Physicians and a member of the AMA, the Minnesota State Medical Association, the Southern Minnesota Medical Association, the American Gastroenterological Association, the Alumni Association of the Mayo Foundation, the Society of the Sigma Xi, the Alpha Kappa Kappa professional medical fraternity and the Psi Upsilon academic fraternity. He was for some years a member of the Executive Committee of the William T. McCoy post of the American Legion.

Dr. Berkman is survived by his wife, Frances and six children, Mrs. Dewain O. Long, Minneapolis; Mrs. Jack Klemanchich, San Francisco; Mrs. Paul Tinetti, Mount Pleasant, Michigan; Dr. David S. Berkman, Rochester; John, Rochester; and Mrs. Burnell F. Eckhardt, Sheboygan, Wisconsin.

JOHN B. CLEMENT

Dr. John B. Clement, pioneer Lester Prairie physician and surgeon, died May 10, 1958, at the Glencoe Hospital. He was eighty-two years old.

Dr. Clement came to Lester Prairie and established his practice October 5, 1899, after receiving his medical degree in Laval University, Montreal, Canada.

He was born in Ontario, Canada, December 12, 1875, the son of Mr. and Mrs. Joseph Clement. He was reared on a Canadian farm and acquired his early education in the Sulpician College in Montreal.

The deceased was a past president of the McLeod County Medical Society and member of the Minnesota State and American Medical Associations.

He was president of the Farmers State Bank of Lester Prairie. He had been president of the village council, member of the Board of Education, and an active member of the A.O.U.W.

After fifty years of continuous service, on October 5, 1949, Dr. Clement was honored by the community at a banquet sponsored by the Civic and Commerce Association.

He is survived by two sisters, Mrs. Emma LaLande and Mrs. Souphranie Touranjeau, both living in Alfred, Ontario, Canada. Mrs. Emma LaLande, a niece, was his housekeeper for about four years.

LOUIS LAWRENCE FREIDMAN

Dr. Louis L. Freidman, St. Paul specialist in obstetrics and gynecology, died June 14, 1958, as the result of a heart attack. He was fifty years old.

He was associated in practice with Dr. Wm. F. Menold, with offices in the Lowry Medical Arts Building, St. Paul.

Dr. Freidman was born in Minneapolis and was graduated from the University of Minnesota School of Medicine. He was a diplomate of the American Board of Obstetrics and Gynecology; a founding fellow of the American Academy of Obstetrics and Gynecology; a fellow of the American Society for the Study of Sterility and a member of the New York Academy of Sciences. The deceased was also a member of the Ramsey County Medical Society, the Minnesota State Medical Association and the American Medical Association.

He founded and directed the fertility clinic at the University of Minnesota, where he also was an assistant professor of obstetrics and gynecology. He was on the medical staff of Midway and Miller Hospitals, St. Paul, and Mt. Sinai Hospital, Minneapolis.

He is survived by his wife, Ferne; daughters, Elizabeth Ann and Cynthia Lou, both of St. Paul, and a sister, Mrs. Ann F. Lipkin of Minneapolis.

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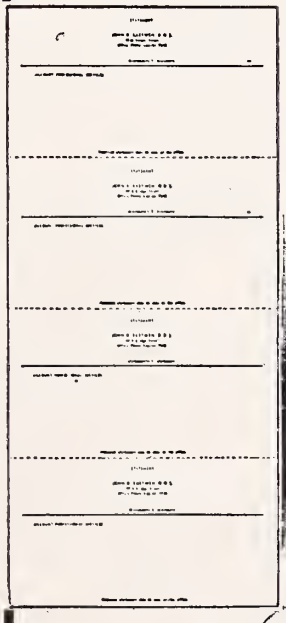
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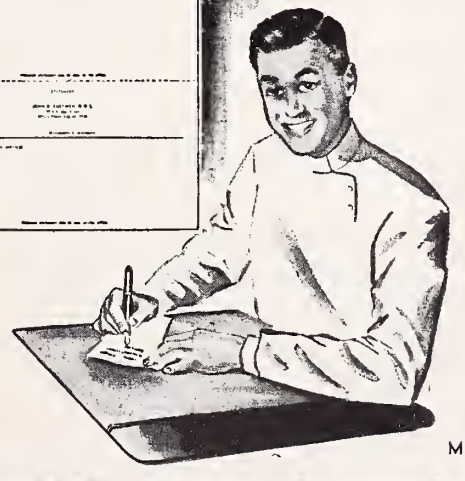
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ERLING S. PLATOU

Dr. Erling S. Platou, Minneapolis physician, died June 17, 1958, while on a fishing trip near Grand Marais, Minnesota. He was sixty-one years old.

At the time of his death, Dr. Platou was clinical professor of pediatrics at the University of Minnesota and a practicing Minneapolis pediatrician.

He had been president of the University of Minnesota Alumni Association, president of the State Board of Health and president of the Minnesota Medical Foundation.

Dr. Platou was associated with the staffs of Northwestern, Abbott and Fairview Hospitals in Minneapolis.

Born in Cooperstown, North Dakota, Dr. Platou graduated from the University in 1920. He became a part-time instructor at the medical school a few years later.

Survivors include his wife, Helen; a son, Jon; two daughters, Susan and Nancy, all of Edina; his mother, Mrs. L. S. Platou, Madera Beach, California; a brother, Dr. Ralph V., New Orleans, La.; two sisters, Mrs. Elaine Gallaher, Minneapolis, and Mrs. Lenore Fernandez, Madera Beach.

HERBERT L. STOLPESTAD

Dr. Herbert Stolpestad, St. Paul physician, died May 22, 1958, as the result of gunshot wounds inflicted by a deranged twenty-five-year-old St. Paul truck driver. Dr. Stolpestad was fifty-one years old at the time of his death.

The deceased was born in Lafayette, Minnesota, and attended Mounds Park grade school and Johnson High School. He was a graduate of Carleton College, Northfield, and the University of Minnesota School of Medicine, class of 1933.

A St. John's Hospital staff member more than twenty years, he had served as chief of staff in 1951.

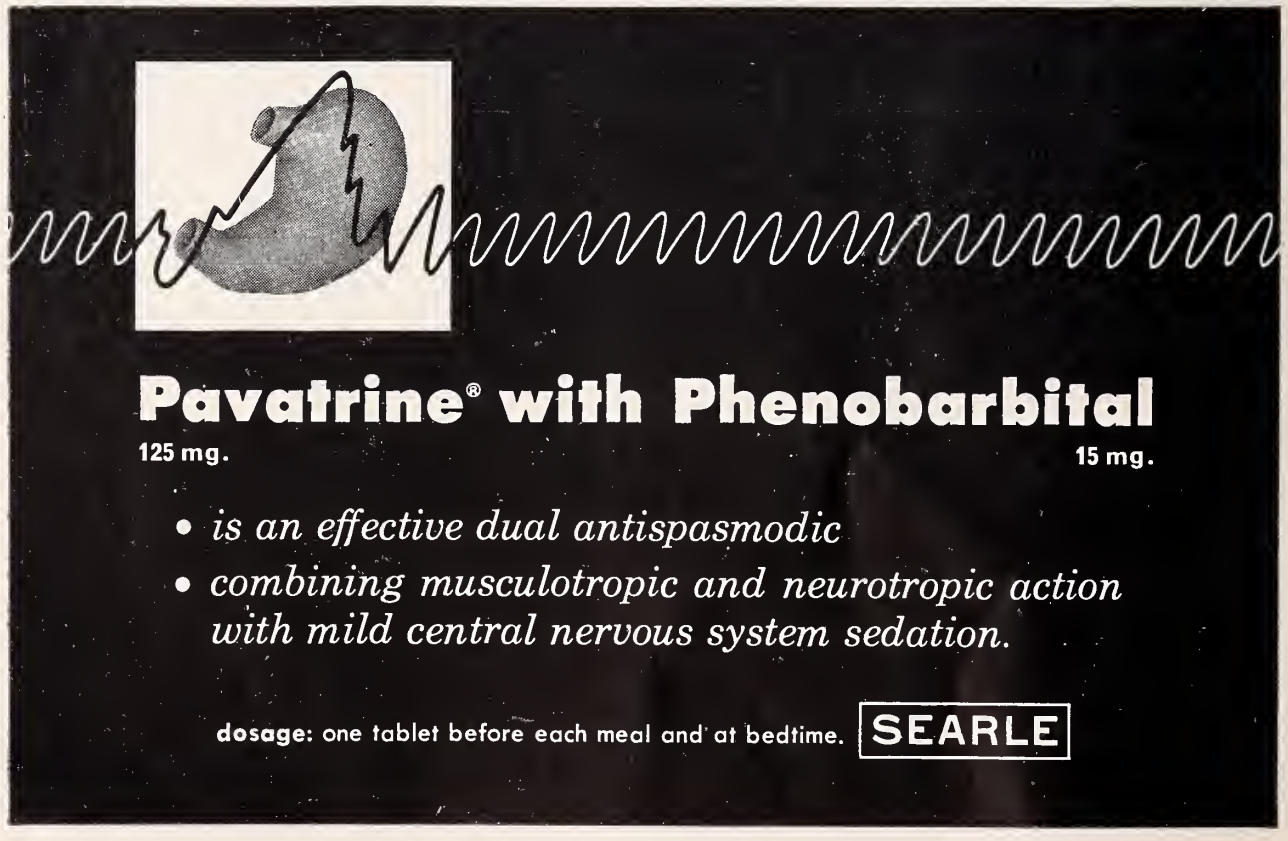
He was a member of the Ramsey County Medical Society, the Minnesota State Medical Association, American Medical Association, American Academy of General Practice, Montgomery Lodge 258, A.F. & A.M., the Scottish Rite and Osman Temple of the Shrine.

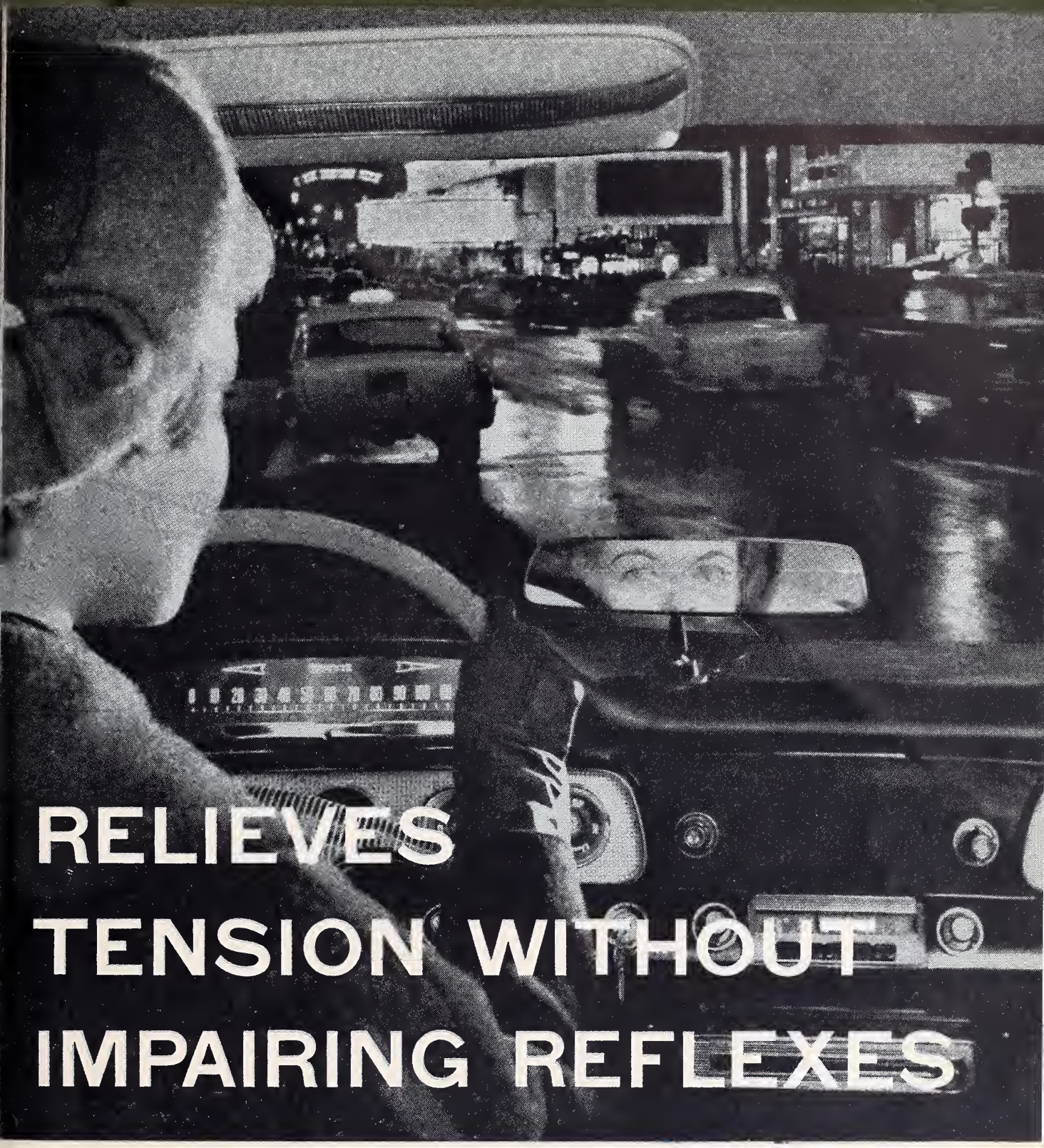
Surviving are his wife, Flora; a son, Harold; his mother, Mrs. Harold Stolpestad; a sister, Virginia, and a brother, Dr. A. H. Stolpestad.

CLUE TO INFERTILITY

Physiological changes in the fallopian tube in women hold the clue to many cases of infertility, suggest Dr. Luigi Mastroianni, Jr., and his associates of Yale University. In addition to being a passageway, the fallopian tube may have an enzymatic and chemical function, they reported. These special functions may explain why surgery to repair or replace a damaged fallopian tube does not cure infertility in many cases. — *American Society for Studies on Sterility Meeting,* Los Angeles, April 21, 1958.

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Marquis, D. G., Kelly, E. L., Miller, J. G., Gerard, R. W. and Rapoport, A.: Ann. New York Acad. Sc. 67: 701, May 9, 1957.

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General Interest

Dr. R. B. Howard, St. Paul, has been appointed dean of the University of Minnesota College of Medical Sciences. He succeeds **Dr. Harold S. Diehl**, who retired June 30. University President J. L. Morrill made the announcement after the Board of Regents approved the appointment in executive session. Dr. Howard was picked by a faculty committee. Dr. Howard, the son of the late **Dr. Willard S. Howard**, St. Paul physician, has served as associate dean of the college since last fall when Dr. Diehl took leave of absence to accept an appointment with the American Cancer Society. He also is a director of continuation medical education.

* * *

A Hopkins physician, **Dr. H. E. Drill**, has been elected president of the Hennepin County Tuberculosis Association. Other officers named were **Dr. Sumner S. Cohen** and Fred H. Waterhouse, vice presidents; Mrs. Virgil Schwartz, secretary; Gordon Christian, treasurer. The executive committee will include the officers and Kenneth A. Backstrom, **Dr. Dean S. Fleming**, L. R. Lunden, Gordon Tucker, **Dr. Asher A. White** and Mrs. Reuben K. Youngdahl.

* * *

At a recent meeting of the American Dermatological Association, **Dr. Francis W. Lynch**, director of the Division of Dermatology at the Universiy of Minnesota, presented a paper, entitled "A Contrast of Cutaneous Cancer as Observed in Texas and in Minnesota." Coauthors were Dr. C. Ferd Lehmann and J. Lewis Pipkin of San Antonio. At the meeting, Dr. Lynch was elected a member of the Board of Directors of the Association.

* * *

Dr. A. M. Olsen has been elected to the Board of Directors of the Olmsted County Tuberculosis and Health Association for a three-year term, to replace **Dr. Herbert W. Schmidt**, who resigned. **Dr. Viktor B. Wilson**, Rochester and Olmsted County Public Health Officer, presented the annual report on the Christmas Seal chest x-ray work and the case finding budget. Chairman of the program committee, **Dr. C. H. Hodgson**, Rochester, outlined problems to be considered by the association.

* * *

Dr. Charles W. Mayo, head of a section of surgery in the Mayo Clinic and professor of surgery in the Mayo Foundation, is the first Minnesotan in history to receive the Medal for Distinguished Achievement of the Grand Lodge of Ancient Free and Accepted Masons of the State of New York in New York City.

* * *

Dr. Charles Butturff, Freeborn general practitioner specializing in skin diseases, was recently voted the best dressed doctor practicing at Naeve Hospital in Albert Lea. According to press comments, his natty hat and bow tie form part of a typical Adolph Menjou ensemble.

Dr. Edward A. Banner of Rochester, president of the Rochester Rotary Club in 1953, and named governor-elect of Rotary District 595 last November, was formally elected district governor at the Rotary International meeting in Dallas, Texas, in June.

* * *

Dr. Alexander Venables, medical director of the Minnesota Mutual Life Insurance Company, has retired from his position. He had been associated with the insurance firm for more than twenty years, and headed the medical department since 1948. From 1933 until assuming medical director duties with the Minnesota Mutual Life, he practiced in St. Paul, and served at different times on the staffs of Miller Hospital, Gillette Childrens' Hospital and Wilder Clinic where for twenty-five years he headed the thyroid clinic. At present, he is medical advisor to the First National Bank, St. Paul. A long-time member of the St. Paul Curling Club, Dr. Venables was recently chosen as outstanding curler for the 1958 Minnesota Centennial Year celebration.

* * *

Dr. Charles A. Owen, Jr., consultant in clinical pathology and associate professor of clinical pathology at the Mayo Clinic, was one of five Monmouth College graduates to receive honorary degrees at the college's 105th commencement services, at Monmouth, Illinois.

* * *

Three Twin City physicians and a St. Paul attorney were speakers at a recent meeting of the Minnesota Academy of General Practice held in Lake City. Speakers included: **Dr. John J. Galligan**, who discussed "Early Identification of Congenital Heart Disease;" **Dr. Herman Kleinman**, who addressed the group on "The Physician and the Epidemiology of Viral Disease of the Central Nervous System"; **Dr. S. R. Maxeiner, Jr.**, who discussed "The Use of Local Anesthesia," and Charles Murname, St. Paul attorney, who spoke to the chapter on "Medical-legal Problems." President of the group is **Dr. Theodore Wellner; Dr. J. E. Verby**, Rochester, serves as secretary-treasurer.

* * *

At the annual meeting of the Minnesota Academy of Occupational Medicine and Surgery held May 27, 1958, in Minneapolis, the following were elected to office: **Dr. Tracy Barber**, Austin, president; **Dr. John A. Williams, St. Paul**, vice president; **Dr. Robert Goltz**, Minneapolis, secretary; **Dr. D. I. Derauf**, St. Paul, treasurer; **Dr. Earl L. Opstad**, Minneapolis, recorder; and **Dr. John Shronts**, Minneapolis, executive committee.

* * *

Dr. Laurence F. Greene, of the Mayo Clinic staff, was awarded a $1,000 study grant at the annual meet-

(Continued on Page A-44)



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(Continued from Page A-42)

ing of the Research Committee of the American Urological Association, Inc., at New Orleans, Louisiana. This amount is a portion of $32,000 granted by the association to several research departments throughout the country. Each recipient has been given a definite and different subject for study.

* * *

Dr. Robert Hugo Johnson, formerly of Chisago City, has opened practice at Bayport.

* * *

Dr. Hugh R. Butt, of the Mayo Clinic, was recently elected vice president of the American Gastroenterological Association at its 59th annual banquet held in Washington.

* * *

Dr. Raymond D. Pruitt, of the clinical section of the Mayo Clinic, was main speaker at the annual alumni banquet of Baker University, Baldwin City, Kansas.

* * *

The recent featured speaker, at a Northwestern College of Minneapolis alumni luncheon held in Sioux Falls, South Dakota, was **Dr. Richard Kieffer**, St. Paul.

* * *

Dr. James E. Jensen, Stillwater physician, has been named medical gifts chairman in a campaign to raise one million dollars for the Lakeview Hospital drive of that city.

Dr. George Eusterman, emeritus member of the Mayo Clinic staff, and **Dr. Waltman Walters** of the Clinic, recently attended the meeting of the Pan-American Gastroenterological Congress at Caracas, Venezuela. Dr. Eusterman also attended and conducted a symposium at the International Gastroenterological Congress at Washington, D. C., following the South American meet.

* * *

Dr. Frank H. Krusen, chief of physical medicine and rehabilitation at the Mayo Clinic, recently presided at a meeting of the National Rehabilitation Development Committee of the American Rehabilitation Foundation, held at the Leamington Hotel, in Minneapolis.

* * *

Dr. Clyde A. Undine, Minneapolis, attended the American College of Physicians annual convention at Atlantic City, New Jersey.

* * *

Dr. Chauncey M. Kelsey, St. Paul, was a recent speaker at the International Surgeons Assembly in Brussels, Belgium.

* * *

Dr. Edward P. Burch is the new president of the medical staff at the Charles T. Miller Hospital, St. Paul. Other officers elected at the annual meeting at the Minnesota Club are: **Dr. Norbert J. Lilleberg**, first vice president; **Dr. H. F. Schroeckenstein**, second vice president; **Dr. J. Allen Wilson**, chairman, administrative poli-

(Continued on Page A-46)



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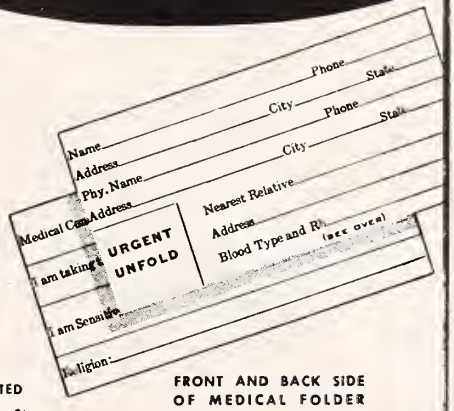


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Congress 2-5522

(Continued from Page A-44)

cy; and **Dr. Frank J. Milnar,** chairman, education and research.

* * *

Two medical clinics will be constructed in Springfield this summer. One will be built by **Dr. E. J. Wohlrabe** and **Dr. E. L. Penk,** Springfield physicians, and the other is planned by **Dr. Francis Boyle** of Tracy.

* * *

Dr. Anthony J. Bianco, Jr., orthopedic surgeon of the Mayo Clinic, addressed the Rochester Exchange Club's luncheon meeting recently on the subject of advisability of installing safety belts in automobiles.

* * *

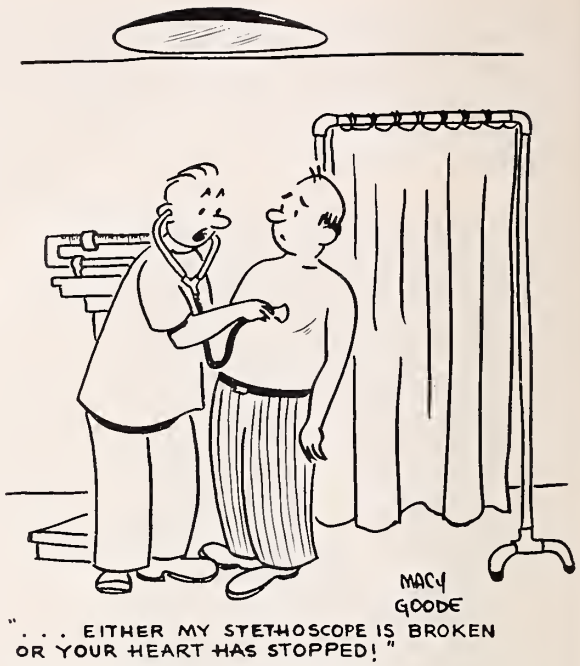
Dr. Roger S. Johnson, of the Minnetonka Clinic, Excelsior, recently returned from Phoenix, Arizona, where he presented a paper entitled "Emergency Care of Trauma," at the annual meeting of the Flying Physicians.

* * *

"The Use of Hormones in General Practice" was the subject of an address given by **Dr. L. O. Underdahl,** of the Mayo Clinic, at the June 9 meeting of the Southwestern Minnesota Medical Society and Auxiliary held at Ehlers Steak House in Worthington.

* * *

Dr. Paul Forester, medical administrator at the Elizabeth Kenny Institute in Minneapolis, was recently awarded the first place gold medal for scientific exhibits, by the American Academy of Neurology. Dr. Forester's exhibit was a combination film and still photographs on neurologic examination of infants during the first year of life. The film is designed to help physicians recognize cerebral palsy and other diseases of the nervous system at an early age.



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* * *

Dr. Ralph E. Smith, formerly of Minneapolis, has joined the Mayo Clinic staff and now is associated with **Dr. R. L. Parker** and others in a section of General Medicine. Since 1948, he has been connected with the University, Ancker and Veterans Hospitals in Minneapolis. From 1953 until recently, Dr. Smith was chief of the Cardiovascular Diseases section of the Department of Medicine at the Minneapolis Veterans Hospital. He has been assistant professor of the University of Minnesota Medical School since 1954.

* * *

Dr. John W. Kirklin, head of a section of Surgery in the Mayo Clinic, and associate professor of surgery in the Mayo Foundation, has been appointed an associate medical editor of "The Heart Journal," a bimonthly professional journal on heart disease for the general practitioner of medicine, it is announced by the American Heart Association. "The Heart Bulletin" was founded in 1952 by Dr. R. Lee Clark, Jr., of Houston, Texas, who was a fellow in surgery of the Mayo Foundation from 1935 to 1939.

* * *

Dr. Robert J. Gorlin, of the University of Minnesota School of Dentistry, was recently elected secretary-treasurer of the American Academy of Oral Pathology in Washington, D. C.

* * *

May 12 was designated as Recognition Night by the Winnebago Kiwanis Club for **Dr. M. D. Cooper,** who

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was honored for his fifty years of public service in Winnebago. **Dr. J. L. Mills** was master of ceremonies.

* * *

Dr. Abbott Skinner, St. Paul, has been appointed chief medical officer of Great Northern Railway, effective June 1. He succeeds the late **Dr. Roscoe C. Webb,** of Minneapolis.

* * *

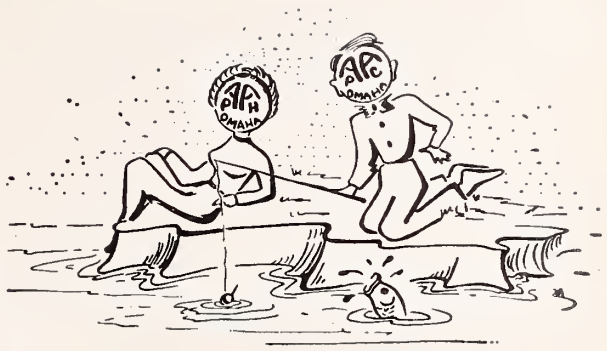
Dr. Henry W. Meyerding, emeritus orthopedic surgeon of the Mayo Clinic and emeritus professor of orthopedic surgery in the Mayo Foundation, has been elected an honorary member of the French Society of Orthopedics and Traumatology, according to a communication from the secretary of that organization.

* * *

Dr. John Casey has become associated with **Dr. Richard Engwall,** of Ivanhoe, in the practice of medicine, effective July 1.

* * *

A new $400,000 goal for the Frank E. Burch Research Fund for Ophthalmology has been announced by the University of Minnesota. **Dr. Burch,** nationally known St. Paul eye specialist and teacher, died last July, at 81. Some $50,000 is needed to equip a new research lab, and the rest is to be used to endow research and training. More than $215,000 is already in the fund, established in 1943.



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Communications

Editor, Communications Section
MINNESOTA MEDICINE

Dear Sir:

In the May number of MINNESOTA MEDICINE, under the section entitled "Communications," are two letters which I feel require some comment. One, directed to the Editor and signed by Dr. J. R. Nickerson of Fairmont, expresses sharp disapproval of an editorial published in the January, 1958, issue; the other, an editorial note, replies to his criticism.

The nature of the editorial and the validity of Dr. Nickerson's condemnation are not material to the point I wish to make. I did not read the editorial and have no opinion about it. Briefly stated, the Doctor took exception to what he considers the use of the editorial pages of MINNESOTA MEDICINE to defend controversial political situations—in this instance, the recent supreme court decisions, apparently mentioned with approval by the Editor. The Doctor also stresses the necessity of fixing responsibility for the use of such material and asks that the author of the editorial be identified. The Editor's rude and evasive reply indicates that Dr. Nickerson's letter touched upon a sensitive point.

In reviewing this editorial answer, I get the impression that it was not a considered, impersonal response to criticism, but rather the attack of an individual aroused by the Doctor's questioning an authorative utterance. Instead of answering Dr. Nickerson in a dignified, reasonable manner, which I am sure could have been done if the Editor felt his position to be sound, he attacked the Doctor in a spiteful, sarcastic, challenging diatribe which apparently had for its purpose the "shutting up" of Dr. Nickerson "good and plenty."

I do not believe that the Editor of MINNESOTA MEDICINE has the right to answer communications in this manner irrespective of their nature. MINNESOTA MEDICINE is the official journal of our State Medical Association, and each member has not only an undeniable privilege, but also a duty to call attention to what he may think improper in the publication. Dr. Nickerson is correct when he says this is a member's prerogative.

The Editor, because of his advantageous position, has the power to "slap down" anyone who disagrees with him. However, to assume a "holier than thou attitude" and express resentment toward what he may consider a disagreeable communication discourages commendable participation of members in Society affairs and restricts criticism to the "pure stainless steel" variety of which the Editor wrote.

The Editor has a right to defend his position, but should do so without the exhibition of animosity resulting from any differences of opinion. He should do so in an impersonal way, demonstrating by reasoned analysis that the objections to his ideas are not sound.

This approach was not used in Dr. Nickerson's case. The invitation for him to write signed editorials was a piece of sneering arrogance. The Editor's suggestion that Dr. Nickerson sign his proposed editorials is odd in view of the fact that the doctor is the only one who, up to this time, has identified himself.

The idea that communications must be signed by the writer is excellent. However, would it not be better if this were not a unilateral policy and the Editors also sign their pontifications?

I feel that MINNESOTA MEDICINE should apologize to Dr. Nickerson for this editorial response to his letter.

Yours truly,
LEO W. FINK, M.D.

Minneapolis, Minnesota
May 26, 1958

This Section is for you to voice your convictions, comments, and queries on all subjects political, economic, historic, humorous, scientific or otherwise, to many physicians. Writings not sufficiently formal and too brief for an editorial or a scientific manuscript are requested. Clinical and research observations, no matter how brief, similar to those in *The Lancet* (London), are particularly encouraged.

EDITOR'S NOTE: Dr. Fink, I wish to thank you for your informative letter. To conserve space, I shall discuss your communication one point at a time, starting at the beginning of the letter and using quotations where possible.

1. The nature of the editorial and the validity of Dr. Nickerson's condemnation are undoubtedly of secondary importance. You should read it. It has a bearing on this letter. You would not write on a scientific medical subject without a careful study of the facts. This matter involves the science of Semantics and mass communication.

2. "Briefly stated"—Dr. Nickerson did not object to the use of editorial pages in MINNESOTA MEDICINE for controversial issues.

3. "Apparently mentioned with approval by the Editor"—the Editor's principal objective is to publish anything in MINNESOTA MEDICINE beneficial to the knowledge of the readers, whether or not he has any feelings pro or con as to the content (see editorial on "The Hospital and Medical Practice" in this issue). Sometimes, it is better to know what the enemies of Medicine are thinking than to know the thoughts of our friends.

4. "Stresses the necessity for fixing responsibility—" no one else seems to have any question about the responsibility for anything appearing in MINNESOTA MEDICINE, particularly in an Editor's Note. This same statement can be made concerning any other medical journal or lay magazine in the United States. There is actually only one editor of each journal, no matter what his co-editors are called.

5. "Advantageous position"—if the Editor has an advantageous position, it is at a considerable cost. May I suggest that if you are interested we need additional co-editors. If you (a) succeed as a co-editor, (b) wish to give up three evenings a week in the form of a contribution to Medicine, and (c) can accept a "diatribe" from any frustrated physician in Minnesota, please let me know.

6. "A disagreeable communication"—please read Dr. Nickerson's letter. He objects to a preconceived and systematic series of editorials which are designed to subtly lead the physicians of Minnesota down the road to socialism.

7. "Discourages commendable participation of members in society affairs and restricts criticism—." Did the presentation restrict your participation and criticism? People, in general, and physicians, in particular, are inclined to make up their own minds on almost any subject, particularly if it is written in a form to stimulate interest.

8. Concerning the terms "impersonal way" and "pure stainless steel"—they were used at a risk calculated to produce an interest in our journal's sections on

Editorials and Communications. These sections of the journal have not been participated in by more than an extremely few of the 3,000 or more physicians of Minnesota. My knowledge of the psychology of mass communication in this matter may be wrong. Definite goals of perfection in each of these sections have been set up for the distant future. They will probably not be accomplished in my tenure of office.

9. "Suggestion that Dr. Nickerson sign his editorials —," and "better if this were not a unilateral policy and the editors also sign their pontifications." To my knowledge, no editor signs his editorials or editorial notes. If you find an exception to this generally accepted rule, please let me know.

10. "Apologize to Dr. Nickerson"—I don't know Dr. Nickerson any more than I know you or you know me. This is not "a cat and dog fight." The Editor's Note in the January issue was calculated to be a greater risk to me than to Dr. Nickerson. In this case, "the ends justify the means." My psychology may be wrong, but if the end result is more self expression by Minnesota physicians in their journal, I have no apology for Dr. Nickerson. After all, he received just what he wanted; now, he is very likely certain that the Editor is an unmitigated fool or worse.

11. It follows that the principal reason for dignifying your correspondence with an Editor's Note (by pontifical action or otherwise) is on the basis that MINNESOTA MEDICINE has slightly more to gain than to lose through this procedure.

12. Leo, do you have these tantrums frequently? If so, I suggest you read the lead editorial in this issue by Leon Saul.

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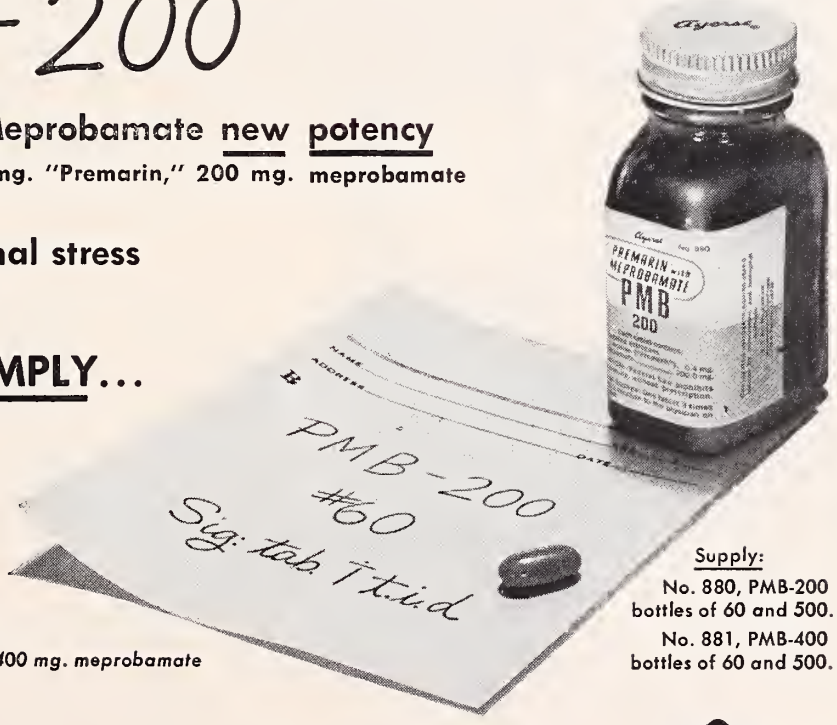
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Book Reviews

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BOOKS RECEIVED FOR REVIEW

ESSENTIALS OF GYNECOLOGY. E. Stewart Taylor, M.D. Professor and Head of the Department of Obstetrics and Gynecology, University of Colorado School of Medicine, Denver, Colorado. 502 pages. Illus. Price $12.00, cloth. Philadelphia: Lea & Febiger, 1958.

DIETARY PREVENTION AND TREATMENT OF HEART DISEASE. John W. Gofman, Ph.D., M.D., Donner Laboratory, University of California, Berkeley; Alex V. Nichols, Ph.D., Donner Laboratory, University of California, Berkeley; and E. Virginia Dobbin, Senior Dietitian, E. V. Cowell Memorial Hospital, University of California, Berkeley. 256 pages. Illus. Price $3.95, cloth. New York: G. P. Putnam's Sons, 1958.

CLINICAL OBSTETRICS AND GYNECOLOGY. Vol. 1, No. 1. Medical Problems in Pregnancy, Edited by Curtis J. Lund, M.D.; Management of Endocrine Problems, Edited by Allan C. Barnes, M.D. 288 pages. Illus. Price $18.00 for four yearly volumes, cloth. New York: Paul B. Hoeber, Inc., 1958.

CLINICAL ENZYMOLOGY. Edited by Gustav J. Martin, Sc.D. Research Director, The National Drug Co., Philadelphia. 241 pages. Price $6.00, cloth. Boston: Little, Brown & Co., 1958.

PATHOLOGY FOR THE PHYSICIAN—Sixth Edition. William Boyd, M.D., Dipl. Psychiatry, M.R.C.P. (Edin.), Hon. F.R.C.P. (Edin.), F.R.C.P. (Lond.), F.R.C.S. (Can.), F.R.S. (Can.), LL.D. (Sask.), (Queen's), D.Sc. (Man.), M.D. (Oslo.) Formerly Emeritus of Pathology, University of Toronto; Visiting Professor of Pathology, University of Alabama; formerly Professor of Pathology, University of Manitoba and the University of British Columbia. 900 pages. Illus. Price $17.50, cloth. Philadelphia: Lea & Febiger, 1958.

BONE TUMORS. General Aspects and An Analysis of 2,278 Cases. David Carl Dahlin, M.D. 232 pages. 353 illus. Price, $11.50. Springfield, Illinois: Charles C Thomas Company, 1957.

This volume has many outstanding features. The accurate compilation, tabulation and evaluation of such a vast series was a tremendous but rewarding task. To have such material presented concisely, logically and dramatically is a welcome and informative accomplishment.

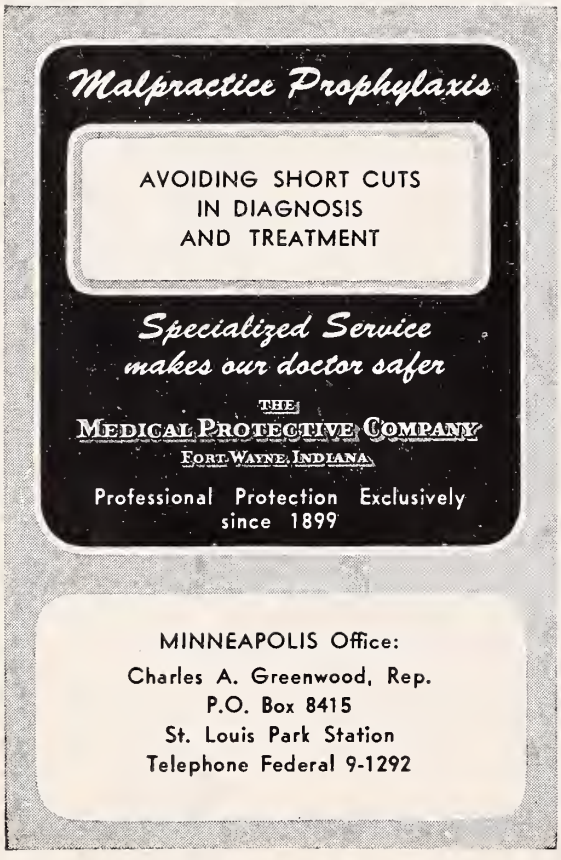
For the pathologist, this offers a useful supplementary text with its excellent gross and microscopic reproductions. The pathologist is also made aware of the challenge, advocated by the author, that more than 90 per cent of the cases of bone tumors can be diagnosed utilizing frozen section technique. To comply with the author's high standards would necessitate a closer and mutually beneficial alliance between the clinician and pathologist, who are too often separated by time and interests.

The practicing clinician can rapidly isolate and identify the characteristics of each tumor and utilize the recorded experience and end results as a baseline for definitive therapy.

The neophyte might well wish that the author would forsake the chosen brevity of the overall descriptions and add his thoughts on theoretical concepts or possible pathomechanics of these abnormalities. The less experienced bone pathologist might also desire some simplification of the histopathologic description and more detailed correlation with the unusually well reproduced microphotographs.

This attractive atlas will be a definite asset to our literature and should take its place among other basic texts in personal libraries.

W. Indeck, M.D.





MINNESOTA MEDICINE

Minnesota State Medical Association

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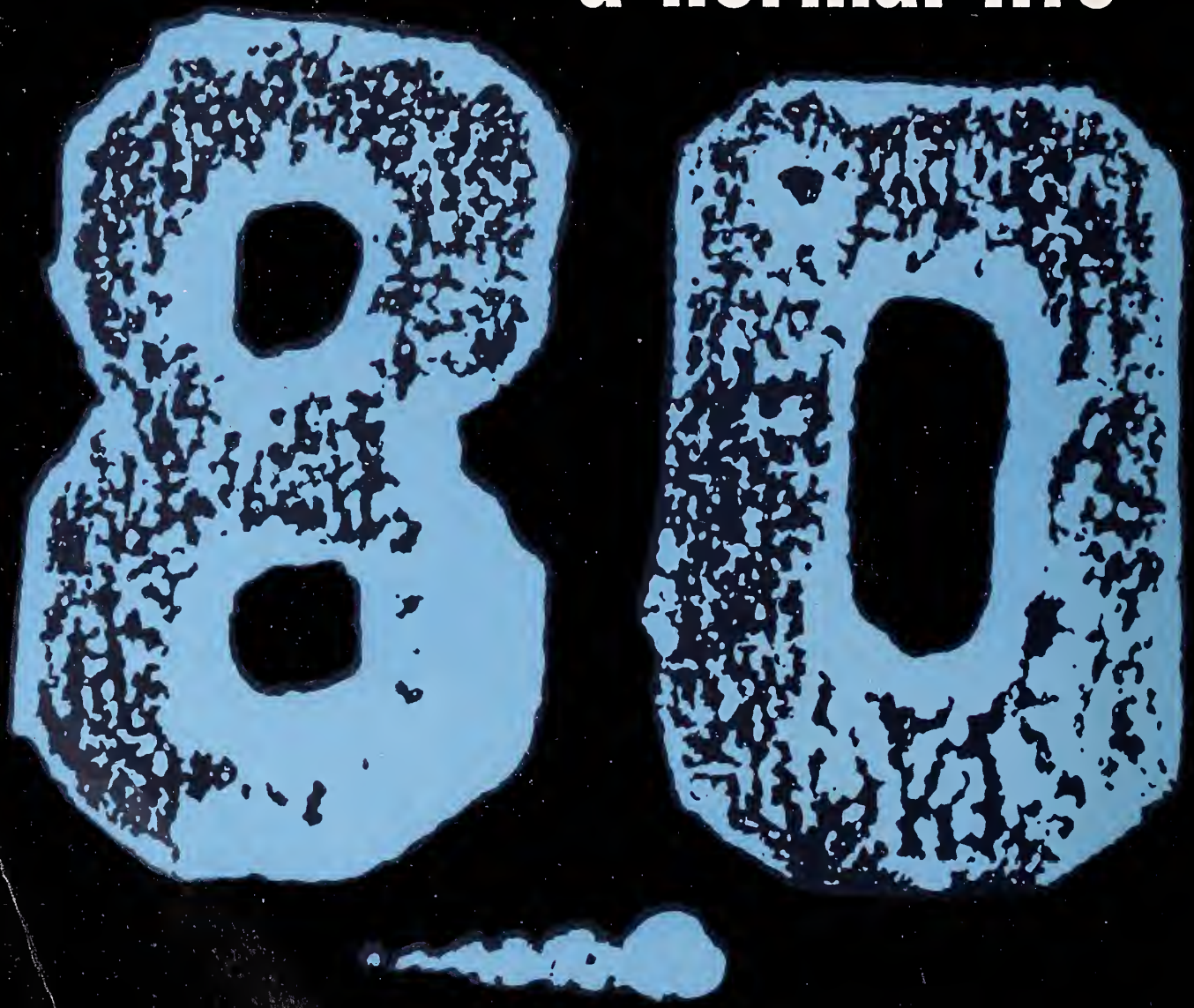
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Original Contributions

Treatment of Superficial Mycoses

HAROLD G. RAVITS, M.D.
Saint Paul, Minnesota

SUPERFICIAL fungous infections of the skin are caused by certain fungi called "dermatophytes" which usually confine their activities to the dead outer layer of the skin, the stratum corneum, as well as the hair and nails. These infections are called tineas, dermatophytoses or, commonly, ringworm.

Treatment must depend on the location of the eruption, the causative organism, state of acuity and inflammation, extent of secondary infection with bacteria, and underlying systemic disease, if present. Although the same organism may be responsible for all the infection, the treatment in different body locations will vary. Thus therapy will be discussed under the headings of specific body sites.

The dermatophytes belong to three different genera, namely, Trichophyton, Microsporum and Epidermophyton. These organisms have a worldwide distribution. Human infections are usually contracted either from infected animals or from other human beings. These diseases are not highly contagious, and mere exposure to large amounts of the fungous elements does not establish an infection in the majority of persons unless special predisposing circumstances are present and a peculiar susceptibility exists.

One important principle which is useful in relation to treatment and prognosis is the tendency of more inflammatory ringworm lesions to undergo spontaneous cure. In such instances of inflammatory ringworm, the clinical rule is that the lesions should be treated conservatively and the use of antifungal agents may then be unnecessary.

Tinea capitis, or ringworm of the scalp, can be either an acute inflammatory or chronic low-grade infection. Cultural identification of the causative organism is necessary to carry out proper therapy. Tinea capitis caused by Microsporum audouini and transmitted from one human being to another is notoriously resistant to therapy; oftentimes x-ray epilation must be used to cure the infection. In contrast, Microsporum canis infections, contracted from animals, will usually respond to topical medications, and x-ray epilation is not necessary. Clipping all the hair from the entire scalp is necessary to facilitate application of medications, and daily shampooing is also done. The wearing of a stockinette or other type of closely fitted cap is recommeded so as to prevent scattering of infected hair fragments.

In the resistant human non-inflammatory Microsporum audouini infection, antifungal agents such as the fatty acid ointments (Desenex, Sopronol, Salundek, Timofax, Naprylate, Decaprylate) are applied daily to the scalp. Also used are ointments such as Asterol, Salinidol, 5 per cent ammoniated mercury ointment, 5 per cent sulfur ointment with 3 per cent salicylic acid, or a modified Whitfield's ointment. If visible inflammation intervenes, this is almost a certain picture of spontaneous involution, and treatment is carried to a successful conclusion. Manual epilation of the infected hairs is carried out weekly under Wood's light, which shows up the infected hairs with a brilliant green fluorescence. In many instances, the infections will show no change for three to four months. The patients but more likely the parents become restless, and then a decision to carry out x-ray epilation becomes necessary. It has long been evident that no medication yet devised can penetrate as deeply into the hair follicles as do the infecting fungi; hence, no one of the above-mentioned medications can be said to be reliably effective, and there is little indication that any one of them is superior. Since the fungus seems to develop a resistance to

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any particular medication after a time, it is advisable to change the prescription every four to six weeks. If x-ray epilation is to be given, it must be done by one who is qualified, either a dermatologist or a radiologist, because of the dangers involved. X-ray epilation is curative in almost 100 per cent of cases of Tinea capitis. Some resistant rare types of Trichophyton infections are treated by x-ray epilation.

Microsporum canis infections are usually contracted from domestic animals and offer a better prognosis because the course of the disease is shorter and there is a greater likelihood of an inflammatory response. Treatment is essentially the same as for Microsporum audouini infections except that x-ray epilation will rarely be indicated and then only in patients whose infection persists longer than six months. If inflammation is pronounced, boggy purulent tumefactions are produced, frequently associated with systemic toxicity. These lesions are known as kerions. They are treated with mild wet dressings such as Burow's solution or Alibour's (also known as Darier's) copper and zinc sulfate solutions. Strong antifungal agents are not used in this stage. The infected hairs are usually shed from the follicles by the effects of the inflammation and a spontaneous cure usually results.

Tinea barbae, or ringworm of the beard, is much less common than usually believed; most beard infections are usually bacterial. Confirmation is made by cultural studies. The typical mycotic inflammatory lesions of the beard are generally kerions and the treatment is essentially the same as in kerion of the scalp. Healing often occurs spontaneously in one to two months, sometimes with atrophy and hair loss. Frequently, it will be necessary to combat secondary bacterial infection before beginning specific antifungal treatment. The sycosiform type resemble a chronic bacterial folliculitis. Here cure is accomplished by the application of antifungal agents and manual epilation of infected hairs.

Tinea corporis, or ringworm of the glabrous skin, usually responds to treatment within two to four weeks. There are many different forms that simulate other types of skin disease and hence cultural identification of the organism is important. If inflammation is severe, wet dressings are indicated; if secondary bacterial infection is present, it must be treated with topical antibiotics. In less inflammatory stages, antifungal agents such as the fatty acids, sulfur salicylic acid-tar ointments may be used as well as 1 per cent tincture of iodine or Castellani's paint.

Tinea cruris, or ringworm of the groins or body folds, is a very common type of fungal infection, especially in male patients. Other intertriginous infections (bacterial), psoriasis, and seborrheic dermatitis must be ruled out. Strong antifungal ointments must be avoided in these areas, as well as greasy preparations, as they are not well tolerated. Ointments with a vanishing cream base are to be preferred, as well as lotions, dyes, powders and wet compresses. A mild salicylic acid (2 per cent) sulfur (3 per cent) cream is helpful, as well as fatty acid preparations in lotion or powder forms. Vioform lotion and hydrocortisone lotions may be very helpful. Aeration is important, and loose garments should be worn to avoid irritation from friction. Secondary bacterial infection, if present, should be dealt with promptly.

Tinea pedis, or ringworm of the feet, is the most common type of fungous infection. The majority of shoe-wearing adult men acquire fungal infections of the feet. It is quite rare in children. Intertriginous ringworm of the feet consists of maceration, sogginess, scaling and fissuring in the interdigital spaces. The most effective methods of treatment of this type are simple. Rest and dryness are important. Antifungal dusting powders are used and ventilated leather soled shoes should be worn, as well as clean, dry absorbent socks. The removal of débris and macerated skin should be accomplished. Foot soaks of 1:8000 dilution of potassium permanganate solution twenty minutes twice daily are of value in acute flares. Antifungal fatty acid preparations are most useful because they rarely cause irritation. Castellani's paint is also of value.

Acute vesiculobullous fungous infections of the feet are treated the same as acute dermatitis of any cause. Wet compresses are used such as Burow's solution 1:20 dilution, Alibour's solution diluted 1:32, potassium permanganate solution 1:8000 dilution, etc. If bacterial infection is superimposed antibiotic therapy is indicated. After the acute inflammation has subsided, antifungal ointments may be used such as Asterol, Vioform, Sterosan, Enzactin, and the fatty acid ointments such as Desenex, Timofax, Sopronol

and Naprylate. Many of the preceding medications are also available in powder and lotion forms.

A less common dry hyperkeratotic form of tinea may affect the feet and hands. This form is usually caused by Trichophyton rubrum and is notoriously resistant to treatment. Besides the above-mentioned antifungal ointments, strong salicylic acid ointments (6 to 10 per cent) are used (variations of Whitfield's ointment).

Allergic reactions to fungal infections occur most frequently on the hands. These lesions are called "ids." Usually, treatment of the infection of the feet will result in involution of the hand lesions, but this is not always true. These lesions may require therapy as used in non-specific dermatoses.

Tinea unguium, onychomycosis or ringworm of the nails, is a highly unsatisfactory condition to treat. Debridement of diseased nails must be carried out by careful filing or by use of a motor-driven dental burr or abrasive wheel. If one or two nails are involved, which is rare, surgical avulsion is sometimes advocated. Solutions of fungicides are usually used because of greater penetrability. Asterol in tincture and ointment is helpful. X-ray radiation has been used with questionable results. Long and continuous treatment is essential, and many patients must be content with improvement in varying degrees, oftentimes dependent on the efforts exerted by the patient.

Cutaneous candidiasis, or moniliasis, which affects mucous membranes, periungual tissues, nail and intertriginous areas is fairly common and probably of increasing incidence. In therapeutic management of moniliasis, correction of underlying predisposing factors, such as malnutrition, excessive exposure to moisture, diabetes, obesity, should be corrected. For treatment of local lesions, aqueous gentian violet 0.5 to 1 per cent is a long-standing favorite. For monilial vaginitis, it is available in a gel form (Gentia-Jel). Fatty acid preparations previously mentioned are effective in treatment of moniliasis. A relatively new antibiotic, nystatin (Mycostatin), is a potent antimonilial agent. It is available in powder form, vaginal tablets, oral tablets, ointment, and as a suspension.

In summary, it is apparent that there are many different types of antifungal agents and many different clinical types of superficial mycoses, even if caused by the same type of organism. General principles of dermatological therapy must be applied judiciously in regard to acuity, inflammation, secondary infection and specific locations of the various types of eruptions.

STUDENTS RECEIVE HEART ASSOCIATION FELLOWSHIP

Eight Rochester students, one from Spring Valley, one from Chatfield and one from St. Charles are among twelve young Minnesota people who are working at the Mayo Clinic this summer as recipients of a summer fellowship conferred by the Minnesota Heart Association. The twelve students, whose interests are primarily in science as a career, began their work at the Mayo Clinic at differing times, each for a period of two months. One group started to work in June; another on July 1.

Working in the cardiovascular laboratory of Dr. Earl H. Wood, professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota, are Nancy Schmidt and Henry Thomas, Rochester. Both have attended the Rochester High School.

Sandra Siegel, Sharon Cadman, Don Helmholz and John Howell, all of Rochester, are working in the Section of Biophysics and Biophysical Research under the direction of Dr. Edward J. Baldes, professor of biophysics in the Mayo Foundation, Graduate School, University of Minnesota. Miss Siegel and Miss Cadman have attended the Rochester High School; Helmholz has attended Harvard University and Howell has studied at the California Institute of Technology.

William Hurrle, of Rochester, who has attended the Rochester High School, is working in the electromyography laboratory of Dr. Edward H. Lambert, associate professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

Marcia Ruth Nelson, of Rochester, who will be a sophomore in the Rochester Junior College in the fall, began work on June 2 in the laboratory of Dr. Warren F. McGuckin, instructor in physiological chemistry in the Mayo Foundation, Graduate School, University of Minnesota.

Roberta Jeffries, of Chatfield, a freshman in the Rochester Junior College, is working in the electroencephalography laboratory of Dr. Reginald G. Bickford, professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

David Krugel, of Spring Valley, a student in Luther College, Decorah, Iowa, is working in the Section of Biochemistry under the direction of Dr. Harold L. Mason, professor of physiological chemistry in the Mayo Foundation, Graduate School, University of Minnesota.

Edward Nelson, of St. Charles, a graduate of Gustavus Adolphus College and holder of the degree of master of science from the Colorado State College of Education, is working in gastroenterologic physiology in the laboratory of Dr. Charles F. Code, head of the Section of Physiology and professor of physiology in the Mayo Foundation, Graduate School, University of Minnesota.

Charles Miller, of Minneapolis, is working in the laboratory of Dr. Wood.

Two other students, Joseph Emond, Jr., of Farmington, a premedical student in the University of Minnesota; and Elaine Handelman, of Minneapolis, are working at the University of Minnesota on summer scholarships awarded by the Minnesota Heart Association.

Acne Vulgaris and its Management

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SINCE the comprehensive reviews on "Acne Vulgaris and Its Management" by Sulzberger[1] and others—first in 1933 and again in 1949—sufficient changes have occurred to make a further analysis desirable.

A better understanding of the sebaceous gland's physiology and pathology[2] has been achieved. These glands are most numerous on forehead, sides of cheeks, center of chest and back, which are the more prevalent sites of acne. There is a marked increase in sebaceous gland activity with the onset of puberty, reaching a stationary level at the age of twenty to twenty-five years and decreasing thereafter. The advent of steroid therapy has again reaffirmed the effect of androgens on stimulation of the sebaceous glands in susceptible individuals. Studies[3] on the androgen excretion of individuals with and without acne reveal no apparent variation, so the sebaceous gland is apparently more reactive to this hormone in the acne-prone individual. This hormone is derived from testicular tissue in the male and the corpus luteum of the female. Other factors which stimulate sebaceous gland hyperactivity are diets rich in lipids or carbohydrates and increased perspiration, especially associated with high humidity.

Pathologically,[4] the acne lesion represents a foreign body reaction about the keratinized plug (comedone) resulting in hyperplastic enlargement and folliculitis. Secondary bacterial infection may occur resulting in abscess formation. The organisms cultured from these abscesses are mostly saprophytic micrococci, variety albus or aureus.

Therapy

From this brief review of the fundamental, pathologic, and physiologic alterations which occur in the acne lesion, one can more readily rationalize a therapeutic regime.

The diet should eliminate excess fats, chocolate, nut products, and fat-fried foods along with an abundance of carbohydrates. The halogens, especially iodine and bromide, have long been known to be irritants to the skin's oil glands and should be eliminated. A frequent source of excess iodine is the over-the-counter super vitamin preparations.

Local treatment should be directed to removal of the excess sebaceous material, the reduction of the local bacteria, and the removal of excessive keratinization about the gland orifices. This process can be aided by the proper use of soaps. Those agents containing detergents, which aid in the removal of fat, with the addition of hexachlorophene to reduce infection, and sulphur to produce exfoliation are preferred. We frequently prescribe 5 per cent colloidal sulphur added to phisohex soap or a preparation known as Fostex soaps. Astringent or cleansing solutions are basically 1-2 per cent salicylic or resorcin compounds incorporated in alcoholic vehicles to which 10-20 per cent acetone may be added for additional ease in fat removal.

Local remedies should have effects similar to those of soaps except that for daytime use they should be cosmetically acceptable. The appended formulary may be helpful in choosing the proper medication. For comedone acne, pastes are more beneficial. The strengths of the sulphur and keratolytic agent (resorcinol or salicylic acid) depend on the skin of the individual. Blondes and red heads require lower concentrations than do brunettes. Those with excessively oily skins and pyogenic lesions are better treated with lotions. Preparations in weaker strengths may be applied during the day if mixed with neutracolor to blend with their skin. Pigments aid in masking the disfigurement and improve the psychological outlook of the patient. The addition of 5 per cent sulfacetamide has proved useful in controlling superficial pustular lesions, and during the past three years we have only seen one allergic reaction to it.

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Antibiotics.—There is little doubt that the proper utilization of the wide-spectrum antibiotics[5] has been a welcome addition to our therapy. Cultures have, in most instances, revealed a saprophytic micrococcus pyogenes insensitive to penicillin, but at present most responsive to the tetracyclines. The mode of action[6] is still not clear; besides a local reduction in the pustules, there is a marked diminution in the staphylococci found in the nasal flora of most of these patients. Only a qualitative change has occurred in the intestinal bacteria in these otherwise healthy individuals. The dosage and duration of treatment are still debatable. At present, I am using the buffered tetracyclines (or those to which glucosamine is added) in doses of 250 mg. every eight hours for five days, then twice a day until most of the pustules have subsided; this usually takes two weeks. Treatment is then discontinued except in the severe multiple cystic (congloblata) cases where it is continued for from four to six weeks. Occasionally, the drug has to be readministered. In those failing to show an adequate response after five days, culture and antibiotic sensitivity studies are performed. Drain-



Fig. 1. *(above)* (a) Preoperative photograph showing bridge and pitted scars and residual active cysts. (b) One year after two dermabrasions.

Fig. 2. *(below)* (a) Preoperative photograph of forty-year-old woman with pitted and linear scars. (b) Six months after one skin planing shows benefit of pitted and linear scars.

age of small superficial abscesses should be carried out, and, in large multilocular cysts, the material should be aspirated and suspensions of neomycin and polymixin instilled.

reserved for those cases not showing response to other previously mentioned therapeutic regimens and in which severe scarring will ensue because of the depth of the lesions.



Fig. 3 *(above)* (a) Preoperative photograph showing ridged, pitted and bridged scars. (b) Six months after two skin dermabrasions shows flattening of ridged scars and general smoothing of skin contour.

Fig. 4 *(below)* (a) Preoperative photograph showing minimal pitted scarring. (b) Photograph six months later after one procedure. Patient improved but not satisfied, stressing need of proper evaluation of patient's expectations.

Radiation Therapy.—There is little doubt that properly applied fractional dosage of roentgen therapy given over a three-month period and not exceeding 900 roentgens per field produces excellent results without sequelae. This treatment is

Hormone Therapy.—Hormonal therapy[7] in the form of estrogen can produce improvement of acne in selected individuals. Those who are apt to be responsive are female patients with premenstrual aggravation or those who were bene-

fited by pregnancy. I prefer the natural occurring estrogens (sodium estrone sulfate) given after ovulation and ten days before the onset of the menses. The dosage[8] and time of therapy can be given diethylstilbestrol, 0.25 mg. to 0.5 mg. daily, three weeks of each month.

Vitamin A.—In our experience, the utilization of water-soluble Vitamin A in the therapy of acne has very limited usage. I employed this medicament in over 300 cases and found it only useful in comedone acne especially those who showed other signs of avitaminosis A. These are individ-

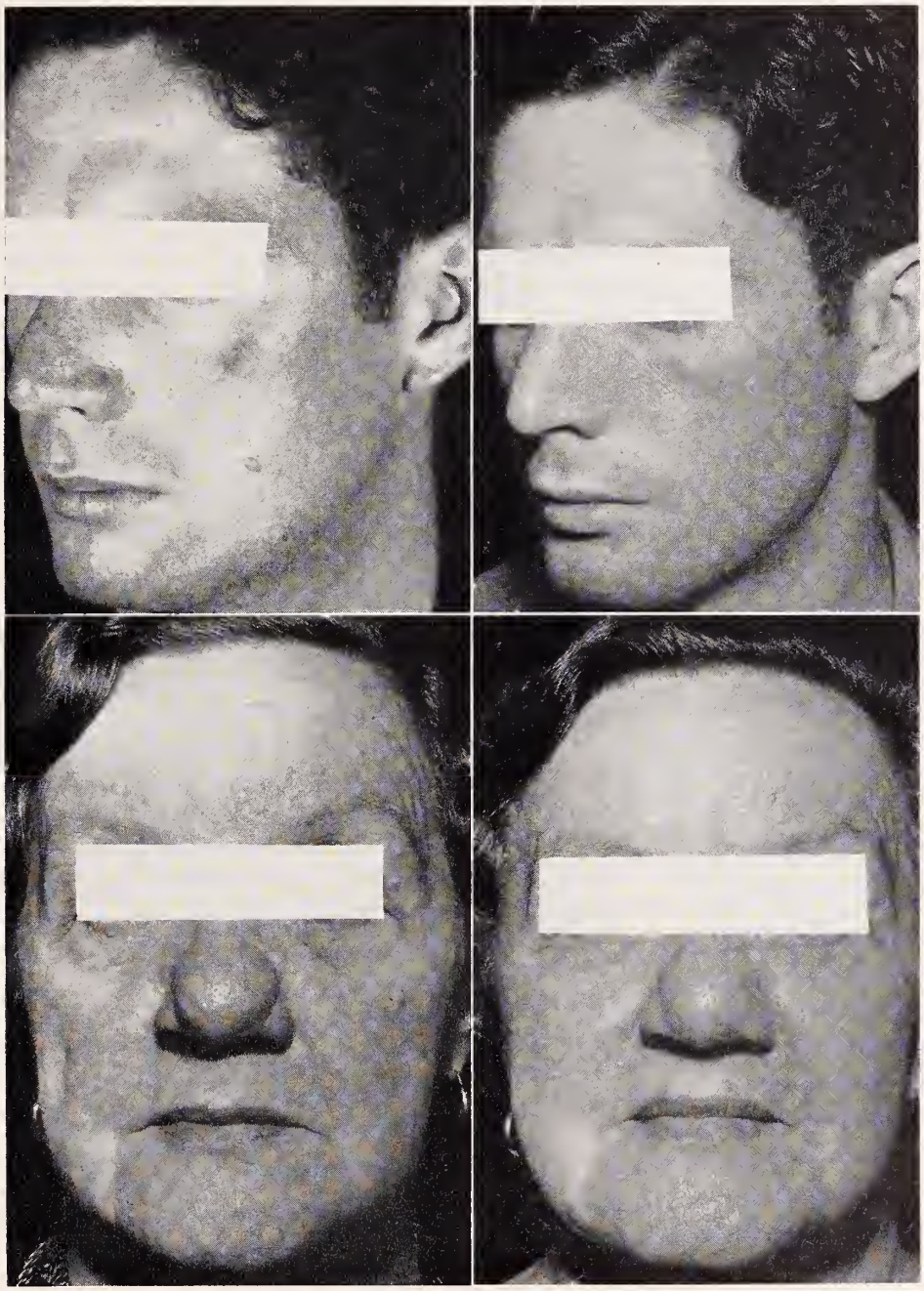


Fig. 5 *(above)* (a) Preoperative photograph showing large pores and ice pick scars. (b) Three months after one procedure showing little improvement; this type of scarring not amenable to any operative procedures.

Fig. 6 *(below)* (a) Preoperative photograph showing rhinophyma and linear scars and wrinkles. (b) Two months after one procedure, note reduction of bulbous nose and improvement in scarred wrinkles.

more accurately studied by the use of vaginal smears for cornified epithelium. Men (over 17 years of age) with severe nodular cystic acne who have been unresponsive to all other therapy are

FORMULARY

Soaps

Basis 10% Sulphur Soap. Duke Laboratories.
Fostex bar and liquid soap. Westwood Chemical Company
(a combination of hexachlorophene, sulphur and salicylic acid)
Vel bar soap. A good soap for mild non-infected oily skin.
3 to 5% Colloidal sulphur in Phisohex soap.
Lava soap. For abrasion effect in comedone acne.

Acne Preparations

Lotions—

Monoacetate of Resorcinol or Salicylic Acid.....2-4%
Precipitated Sulphur.....6-10%
Neutracolor .....0.5-1% for coloring
Leiner's Zinc Lotion q.s.....120.0
5% Sulfacetamide to be added for superficial infections.
Compound Sulphur and Resorcin lotion.
(Resulin — lotion tinted — blonde or brunette) Almay
Sulforcin lotion or cream, untinted.
Liquimat, a tinted lotion with sulphur.
Texas Pharmacal Co., San Antonio, Texas.
Polythionate lotion. Upsher-Smith, Minneapolis, Minnesota.
Lotio Alba. N.F.

Pastes—

Acne Dome cream and compact. Dome Chemical Company.
Acnomel. Smith, Kline & French, Philadelphia, Pa.
Sulforcin base—½ and full strength, with and without resorcinol.
Three shades—light, medium, and dark. Texas Pharmacal Co.
Salicylic Acid or Resorcinol.....0.35
Precipitated Sulphur.....0.65
Petrolatum 10.0
Zinc Paste q.s.....30.0
Neutracolor to tint as desired.....0.5 to 1%

Precipitated Sulphur.....3.0
Kaolin 3.0
Unguentum Zinc Oxide.....30.0
Salicyclic Acid or Resorcinol may be added for keratolytic effect:
Intraderm Sulphur. Wallace Laboratories—(Strong Liquid Sulphur Solution)
Pronac powder makes Vleminckx's solution. Can be made fresh as needed for use.

Astringent or Cleaning Solutions

Salicylic Acid or Monoacetate of Resorcinol.....1-3%
Glycerine 5%
Acetone 10-20%
Spirits Odorat or Bay Rum for perfume q.s.
Alcohol 70%.....q.s.

Sebanil. Texas Pharmacal Company.

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uals with generally dry peripheral skin associated with keratosis pilaris on the extensor surfaces of the extremities. The dosage should be 100,000 units a day in a divided dose and must be given over three months in order to be effective.

Emotional Factors

One must not neglect the effect of emotional upsets on the acne eruption which is usually manifested by minimal lesions in which mutilation results from picking and squeezing. Treatment of the acne alone in such individuals is a neglect of the underlying problem which must be solved to bring about satisfactory improvement. Nervous tension produces excessive stimulation of the pilosebaceous glands and frequently may cause exacerbations.

Treatment of Acne Scars

In spite of all newer modalities of therapy, one is still confronted with a scarred face which provokes a great deal of psychic trauma. Through the years, various methods of improving scars have been tried. Kromayer[9] in 1905 utilized abrasive stones powered by dental motors. This was a vast improvement over earlier hand abrasives with pumice and other materials. For a period, freezing with a carbon dioxide slush was popular. During World War II, Iverson[10] and later McEvitt[11] popularized the use of coarse sandpaper. This procedure required either a local or general anesthesia.

Kurtin[12] in 1952 instituted another method employing an ethyl chloride spray with a blower to freeze and anesthetize the skin. He also developed stainless steel brushes, driven by a high speed (15,000 rpm) cable motor, to perform the abrading. Since that time, various modifications of this procedure have evolved, namely by Eller,[13] who recommended the use of a belt-driven machine rather than a cable, because he believed there was less vibration at high speeds. He also preferred serrated steel wheels, diamond fraises, and heatless stones rather than steel brushes. In 1954, Wilson, Luikart, and Ayres[14] introduced dichlorotetrafluoroethane as the anesthetic and refrigerant. Its greatest advantage lies in not requiring the air blower for evaporation to produce freezing, and it is less toxic on inhalation than ethyl chloride.

In my experience, cosmetic defects amenable to dermabrasion therapy are: pitted and bridge scars, recalcitrant active acne, rhinophyma, and linear scars.

In the selection of patients, the most important prerequisite is adequately functioning pilosebaceous glands; therefore, this procedure should not be used in severe radiation-damaged skin. It is also important that the patient desires therapy

and that the scarring is sufficient to warrant treatment. One must beware of the narcissistic individual with minimal scarring. This procedure does not benefit enlarged skin pores or so-called ice pick scars.

The technique of the operative procedures, though not difficult, is tedious. Those interested in performing this therapy should read *Wire Brush Surgery* by J. W. Burks, Jr.[15]

Complications in my experience of treating over 200 patients have been negligible. Mild superficial infections, especially about the nasolabial folds, have occurred infrequently and have required only local applications of antibiotic ointments. About 60 to 80 per cent improvement is usually obtained with the first planing and to a lesser degree with each subsequent treatment. I usually wait from six to twelve months between each procedure. Erythema of the planed area usually lasts from six to twelve weeks and may be masked by face powder. Pigmentation of the borders sometimes occurs around the planed areas, especially after actinic exposures. The development of milia (white heads) is the most frequently observed reaction, and they all eventually disappear.

Postoperative dressings and care vary a great deal except in one essential; that is the need of early exposure to air. We apply sterile vaseline gauze pressure dressing for twelve hours, and then it is removed and the crusts allowed to dry. After five days, the patient sponges the area with sterile water and soap twice a day. Nearly all crusts are removed by the end of five to seven days. We have found antibiotics unnecessary either for local or systemic medication.

At present, I believe this method to be the best since it requires no general anesthesia, it can be done in the office, the loss of the patient's time is minimal (five to seven working days), the areas to be treated can be selected, the freezing of the skin allows a bloodless field of operation, and the complications of foreign body granulomas do not occur.

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ACCIDENTAL DEATH STATISTICS

Accidents, which have claimed an average of 93,000 lives annually over the past ten years, are responsible for 6 per cent of all deaths in the United States. Among persons one to thirty-six years of age, they are a leading cause of death.

Accidents play an important role in the mortality of the aged, a fact that may be overlooked because of the high incidence of chronic diseases in that group.

Among persons past age sixty-four, accidents cause between 25,000 and 26,000 deaths annually. Aging persons account for one out of every four accidental deaths.—*Patterns of Disease.*

Dermatitis of the Hands

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ECZEMA is a term which is difficult to define. Its meaning depends largely on the particular concept of the individual physician. It is a common, superficial, inflammatory dermatosis which does not belong to any other recognized dermatologic category and which, in its evolution, is characterized by the formation of vesicles. Eczema is generally recognized on a morphologic rather than an etiologic basis. Just as Hebra (cited by Sulzberger and Wolf[1]) stated: "Eczema is that which looks like eczema." The acute phase is characterized by vesiculation, weeping, exudation, erythema and edema. During the subacute stage, macroscopic vesiculation and weeping may or may not be present and there is less erythema and edema. Later in the course of the disorder there is no vesiculation nor weeping and little or no erythema and edema. During this phase there may be scaliness and lichenification. In this paper no distinction will be made between the terms eczema and dermatitis.

Dermatitis of the hands is an extremely common disorder and, according to Lane and his colleagues,[2] constitutes about 9 per cent of the daily medical effort of a practicing dermatologist. Many of the patients are housewives whose hands come in contact with a wide variety of cutaneous irritants. Excellent discussions of the subject have been published by Jordon and his colleagues[3] and Sutton and Ayres.[4]

Mechanisms of Dermatitis of the Hands

Eczematous eruptions of the hands are provoked by many mechanisms among which are physical agents; contact with primary irritants and sensitizers; infection with viruses, bacteria and fungi; tension and fatigue; heredity and combinations of these mechanisms.

Physical Agents.—Trauma, friction, excoriation, heat, cold, moisture and maceration, and radiation (actinic, roentgen or radium) may produce dermatitis of the hands. The effect of these agents includes lacerations, bruises, crushing injuries, chapping, burns, frost bites, sunburn and radiodermatitis. A prerequisite for the successful management is the elimination of continued action of the irritants and protection by means of bland, soothing applications which allow the skin to heal as best it can. In some cases of radiodermatitis, plastic surgery is necessary.

Primary Irritants and Sensitizers.—The substances in this group which can produce a contact dermatitis of the hands are too numerous to list. They include most occupational and industrial excitants; substances encountered in hobbies, games, professions; soaps, cleansers, plants, gloves, rings, bracelets, topical medications applied to self or others; in fact all objects which may be touched, handled, held or worn. The irritant and drying effects of soaps and detergents, especially during the winter months, may initiate an eczematous eruption of the hands especially in housewives. Common household irritants such as bleaches, waxes, polishes, hand lotions and creams may add to the irritation. Secondary infection may occur.

Parasitic Infections.—External parasitic infections include impetigo, infectious eczematous dermatitis and dermatomycosis due to specific fungi. There are many other infections such as warts, carbuncle, diphtheria of the skin, anthrax, tuberculosis and syphilis which will not be considered in this presentation.

In spite of the frequency with which the diagnosis of primary fungous infection of the hands is made, it is relatively rare. The diagnosis should be accepted only after the organism has been demonstrated by direct potassium hydroxide mounts examined microscopically or by cultures on Sabouraud's medium.

The role of internal focal parasitic infections in the production of eczematous eruptions on the hands is debatable. Undoubtedly, significant foci may exist in distant sites from cutaneous diseases

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such as teeth, gums, tonsils, sinuses, prostate, cervix, bladder and the gastrointestinal tract. The pustular bacterid as emphasized by Andrews[5] presents discrete lakes of pus about the fingers and on the palms and soles. The pustule, undergoing involution, dries to a thin scale and discrete brownish macule, but other secondary changes are infrequently seen. Andrews regarded the affection as dependent upon focal infection. Unfortunately in my experience I have been unable to find foci of infection in most of the cases and in those where such foci were found, removal did not influence the course of the disorder.

Tension and Fatigue. — So-called exudative neurodermatitis (nummular eczema) is generally regarded as a distinct type of chronic dermatitis of the hands. It attacks the dorsal surfaces and other parts of the extremities in the form of oval patches, 1 to 5 cm. in diameter, consisting of groups of vesicles or vesico-papules. The lesions are quite sharply demarcated, worse in winter and aggravated by friction and alkali. In most cases the dermatosis is recalcitrant to treatment. Many measures have been used including roentgenotherapy, sulfonamides, antibiotics, and removal of foci of infection.

Lichen chronicus simplex (circumscribed neurodermatitis) of the palms and soles has been discussed by various observers. Many of the cases resemble keratoderma climactericum but do not occur exclusively in women. The patients are adults and the majority of them are beyond middle age. The lesions consist of sharply circumscribed, hyperkeratotic, nonvesicular plaques. They are intensely itchy and frequently become fissured. Symmetry is the rule and the lesions are usually located on the mid-palmar regions although occasionally on the fingers.

Atopic dermatitis, a disorder of unknown cause, is usually flexural but may affect the hands predominately. It is a dry disease unless it is secondarily infected and usually occurs on the dorsal surfaces of the hands and fingers, tends to become worse during the winter months and is resistant to treatment. Heredity, tension and fatigue play a poorly understood role.

Management of Dermatitis of the Hands

The treatment of dermatitis of the hands requires both internal and external measures. Although internal medications have assumed increased importance during the past few years, topical therapy is still important. A common error in dermatologic therapeutics is the application of remedies which are too strong or entirely unsuitable for the case in question. In general, the more acute the disorder the milder the local treatment should be.

Moist applications are more effective when they are not hampered by the presence of scales and crusts, hence proper cleansing of the skin is important. Cleansing can be accomplished in acute and subacute dermatoses, when vesiculation and oozing are present, by means of the application of moist compresses. In some subacute dermatoses cleansing may be accomplished by the use of mineral or olive oil or a cleansing cream. In subacute or chronic dermatitis, scales, crusts or medications may be removed with benzine or carbon tetrachloride. There are numerous proprietary soapless detergents which are useful occasionally: sulfonated oils, Acidolate, Phisoderm, Allercreme Detergent Oil, Lowila Cake, Dermolate, et cetera.

In acute eczematous dermatoses of the hands moist compresses maintain drainage and prevent rapid changes in temperature of the skin. Wet dressings are soothing, antipruritic and mildly antiseptic. They should be thick and placed snugly about the affected parts, kept constantly wet and changed frequently (every two hours if possible). They should not be covered with impervious materials such as oiled silk. The Derm-Pak therapeutic glove* has been a great boon in the management of dermatitis of the hands. The glove offers a convenient and timesaving method for applying absorbent moist compresses in the treatment of "housewife's," occupational and other types of eczema of the hands. The glove is made of twelve-ply quilted and washed hospital gauze. The Derm-Pak glove is ventilated to prevent maceration and may be washed and re-used. It is available in two sizes, small and medium, and either glove fits the right or left hand. In the hospital, the glove expedites nursing care and permits patients to read and feed themselves. In the home the glove enables patients to carry on simple household duties without interrupting the treatment.

The medications used most commonly for moist compresses are Burow's solution (aluminum sub-

*Manufactured and distributed by the Derm-Pak Corporation, 292 East Fifth Street, Saint Paul, Minnesota.

acetate) and Darier's solution (copper and zinc sulfate). The former is usually diluted 1:20, and the latter 1:30 with distilled water. Occasionally other solutions are used such as potassium permanganage (1:5000) and silver nitrate (⅛ to ¼ per cent).

In subacute dermatitis of the hands, shake lotions are helpful. They are liquid preparations usually having water and/or alcohol as a base and containing ingredients in solution or suspension or both. As the liquids evaporate, the powders and other ingredients remain, thus cooling the inflamed skin. Lotions are useful in extensive dermatoses which are relatively nonexudative. They may be sponged on or spread on with a soft brush. Various medications such as antipruritics, keratolytics and antiseptics can be added to lotions alone or in combination as required. The most commonly used shake lotions are: zinc lotion (Leiner's lotion), calamine lotion, Schamberg's lotion and dry paint.

Pastes, which are also helpful in subacute dermatoses, are semisolid preparations consisting of mixtures of greases and finely dispersed powders (talc, zinc oxide, etc.) in varying proportions. Pastes aid in absorbing secretions and are more permeable than ointments. They are less macerating, occlusive, and heating. The most commonly used one is zinc paste (Lassar's) which contains zinc oxide 25 per cent, talc or starch 25 per cent in a greasy base.

Ointments (salves) constitute one of the oldest and most commonly used forms of dermatologic therapy. They consist of medications in greasy bases such as animal fats (lanolin, lard, cocoa butter), mineral fats (petrolatum) and preparations such as Absorbent Base (Upsher Smith), Aquaphor (Duke Laboratories) or Hydrosorb (Abbott Laboratories). Ointments are usually contraindicated in moist, oozing eruptions, since they interfere with drainage.

It is not within the scope of this paper to discuss all of the various medications which are used alone or in combination with the aforementioned vehicles. These include antipruritics (menthol, camphor and phenol), keratoplastics (salicylic acid and resorcin in weak concentration), keratolytics (the same drugs in stronger concentration) and many antieczematous agents. In the past few years hydrocortisone has proved to be valuable either alone or in combination with other agents such as Ichthyol, Nafatlan, various types of tar, Vioform and Sterosan. Eczematous eruptions of the hands which are secondarly infected are benefited by the application of hydrocortisone in combination with one or more of the antibiotics such as bacitracin, neomycin and polymyxin.

The proper, cautious use of superficial roentgenotherapy is helpful in eczematous eruptions of the hands. Such treatment requires special dermatologic training and experience. Ultraviolet radiation may be of occasional value.

Comment and Summary

Dermatitis of the hands is usually complex etiologically and is seldom due entirely to one mechanism. In most instances the irritants which produce eczema are external and only relatively few cases are due to blood-borne noxae. Undoubtely there is a predisposition to the eczematous form of response in certain individuals and on certain parts of the skin. In some cases of dermatitis of the hands the substances which produce dermatitis of the hands are numerous and varied, although in most there seems to be a selectivity in sensitizations to various substances. When physical agents play an important role, areas of the skin which are in juxtaposition, are predisposed such as the groins, eyelids and post-auricular regions. Trauma, friction, maceration, and other factors produce dermatitis more easily in these locations. In eczema of the hands the interdigital areas are more susceptible, as exemplified by the frequent occurrence of dermatitis beneath rings due to sensitization to metal or irritation from soap and detergent films beneath the rings.

In the management of eczematous eruptions of the hands certainty of diagnosis, whenever possible, is important for proper therapy. The choice of medications is determined largely by the morphologic characterictics of the eruption. It is better to use a few remedies and know them well than to use many and not be thoroughly acquainted with them. Any chosen medication may do harm. If it does, stop it at once. As Stokes (cited by Wise and Sulzberger[6]) so aptly put it: "An expert can, by a skillful (and to the uninitiated, quite incomprehensible) juggling of lotions and salves, produce effects that an amateur cannot imitate."

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(Continued on Page 543)

Use of Sedatives and Tranquilizers in Dermatology

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FOR many years sedatives and, in recent years, the so-called tranquilizers have held a prominent though not always distinguished place in all branches of medical practice. That they are useful, desirable, and efficient is admitted readily, but it is likewise true that all too often they are administered indiscriminately, lavishly, and inexpertly.

My role in this symposium is to evaluate in so far as possible their proper use in the field of dermatology and, equally important, to relate their untoward effects. These drugs do not cure—they impart to the afflicted patient sleep, relief of tension and apprehension, acceptance of unwanted situations, and promote more calm relaxed attitudes toward the problem. Incidentally, the physician's burden of care and consultation is also eased because of the patient's more docile and tractable reaction. It should be pointed out that there is no great distinction between sedatives and ataractics (the latter term is preferable to tranquilizers). Sedation connotes the production of sleep or drowsiness and ataraxy the assuaging of tension.

These preparations should never supplant a physician's interest in his patient nor be a substitute for time when the physician should explain to his patient the problems involved and the influence of "mind over matter." These drugs must be considered as agents of relief and as potentiating the effects of other remedies rather than a cure.

Many dermatologic conditions are psychogenically induced or exaggerated. For patients afflicted with such disorders, these drugs are indicated and are of definite value. Examples of such dermatoses are anogenital pruritus, atopic dermatitis, dysidrosis, urticaria in some patients, neurodermatitis, nummular eczema, prurigo, and even occasionally, rosacea and psoriasis. In this listing it is seen that most of these conditions are accompanied by pruritus of varying degrees, and yet sedatives and ataractics are not primarily antipruritic in action. It must be admitted, however, that there is no truly good antipruritic and at least with this group of medicaments awareness and appreciation of itching are lessened. Consequently, the use of mild sedation and ataraxy has two possible beneficial components: (1) relief of the tension that precipitates the dermatosis, and (2) lessened awareness of pruritus with resultant increased comfort.

Each of us has his favorite sedative, analgesic and ataractic which he uses when and where he thinks indicated. My choices may not agree with yours and vice versa. This is as it should be provided that each of us understands the indications, limitations, contraindications and possible untoward reactions of the drug being administered. Yet some generalizations are possible and should be made.

Narcotics are rarely, if ever, indicated in dermatologic practice. This is not only for the reason that they produce addiction. They also may evoke severe pruritus.

Barbiturates of various types and commercial origin have been used for decades as sleep-inducing agents, and for this indication they are satisfactory. On the other hand, they may enhance scratching by decreasing the cortical control necessary to inhibit the scratch reflex, and consequently, they may increase the itch-scratch cycle. Hence, I do not think barbiturates are indicated in the care of patients with pruritic dermatoses. What then is a desirable sedative for dermatologic patients? Chloral hydrate I believe is satisfactory. It sedates, is not expensive, rarely produces untoward reactions, and does not increase the itch-scratch cycle. There are newer sedatives, such as ethchlorvynol, glutethimide, ethinamate, methyprylon and methylparafynol, that are not barbiturate derivatives. These may be used instead of chloral hydrate.

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Ataractics in common use today are of three basic chemical types, namely, alkaloids of Rauwolfia, meprobamate, and phenothiazine derivatives. Without going into the advantages and disadvantages of one over another, it can be said truthfully that when administered in low dosage (which is employed for the great majority of patients seen with dermatologic conditions) they are usually safe. It should be mentioned that the actions of alcohol and of barbiturates are potentiated in patients receiving ataractics, and for that reason they should not be given concurrently.

The use of ataractics in patients with psychogenically induced dermatoses and with pruritic dermatoses has been cited previously. There is still another category of conditions for which they are of value, namely those accompanied by pain. Here the appreciation of pain may be allayed to the degree that the dosage and frequency of administration of analgesics may be decreased materially. In this connection, ataractics have proved beneficial in the management of patients with the lightning and spot pains and gastric crises of tabes dorsalis, with painful cutaneous ulcerations and with herpes zoster and postherpetic neuralgia.

TABLE I. THE COMMON UNTOWARD REACTIONS OF SEDATIVES AND ATARACTICS

	Cutaneous	Systemic
Barbiturates	Scarlatiniform and morbilliform erythemas Fixed drug eruption	Paradoxic excitability Habit forming
Chloral hydrate	Erythematous blush Scarlatiniform erythema	Mental confusion
Alkaloids of Rauwolfia	Simple purpura Toxic erythema	Depression
Meprobamate	Urticaria Morbilliform erythema	Acute anaphylactoid reactions (rare) Gastrointestinal upsets
Phenothiazine derivatives	Erythemas Photosensitivity Contact dermatitis	Jaundice (rare) Hematopoietic suppression (rare)

There is no drug or medicament administered by any route that does not produce untoward reactions in occasional patients. The preparations under discussion are no exceptions, and the untoward reactions most commonly seen (though still rarely) are listed in the accompanying table. These reactions usually subside promptly when use of the offending medicament is discontinued.

This paper is so brief and covers so wide a field about which volumes have been written that it, in its entirety, may be considered a summary.

JAWBONE GRAFTS STILL STRONG AFTER FORTY YEARS

Hip and shin bone, substituted nearly forty years ago for jawbone in two World War I soldiers and a civilian tumor victim, are still functioning perfectly today. Recent x-ray examinations show complete consolidation of the bone grafts at each end with the original silver wires still in place.

These results were reported recently to the American Association of Plastic Surgeons meeting in Dallas, Texas.

In 1919, bone from a soldier's shin bone was used to repair a defect in his lower jaw. In another 1919 case, a transplant was taken from a soldier's hip bone. Today, one of these soldiers is a leading orthodontist. The other is a successful business executive.

The third patient, a mechanical engineer, had two inches of his lower jaw replaced in 1920 by a graft from the crest of his own hip bone.

The report on these successful bone grafts was made by Dr. Robert H. Ivy, Professor Emeritus of Plastic Surgery at the University of Pennsylvania Medical School and Dr. Joseph Eby, a New York orthodontist. Dr. Ivy performed the original surgery and Dr. Eby designed the splints to hold the bone fragments in place and replace the teeth lost with artificial dentures.

The Present Status of Herpes Simplex

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THE AGE-OLD thorn in the side of the ophthalmologist, herpes simplex, remains prominently there today. Indeed, it has become more of a problem with the passing of time. Since the war, there appears to have been an increase both in the incidence and in the severity of the disease.[1-3] More reports of chronicity associated with disciform keratitis and uveitis are appearing. Prior to the time of the steroids, corneal perforation and hypopyon were unheard of complications; now, several cases of each have been reported. A better understanding of herpes simplex and its associated problems, seems in order.

Clinical Aspects

Herpes simplex is one of the most common viral infections affecting man. Few individuals go through life without contracting it, yet few have serious sequellae. One sees, largely, the recurrent type of infection that occurs in an individual who previously has had a primary infection usually without symptoms. The natural history of the disease is vital to the understanding of the problem. Passive immunity from the mother exists in the newborn child up to the age of six months or so. It is rare, therefore, to have the disease prior to that time. Exposure to the virus after that time results in a primary infection which will be discussed later. Greater than 90 per cent of the primary infections are subclinical.

Following the primary infection, antibodies are built up and the virus is harbored in a latent state. It remains latent until by some stimulus it is released and a recurrent infection takes place. The stimulus necessary varies with the the individual, but fever, sunlight, trauma, corneal foreign body or abrasion, menstruation and emotional stress are the ones most commonly involved. It appears that susceptible individuals have circulating antibodies and are subjected to repeated attacks, while non-susceptible individuals have no circulating antibodies. It is of interest also that about 90 per cent of the lower class have serum antibodies while only 30 to 35 per cent of the college students have.[4]

Clinical Types

Acute primary herpes simplex.—This initial infection is seen usually in the child or the young adult, one without circulating antibodies. Its clinical features vary from a few isolated vesicles to a fulminating illness. As previously mentioned, however, most cases are asymptomatic. The face, especially around the nose and mouth, gives rise to the typical picture of a "cold sore" or "fever blister." Occasionally the lid margin, conjunctiva and the cornea are involved. If the eye itself is the site of the primary infection, the picture is one of an acute, violent, follicular conjunctivitis. There may be pre-auricular and anterior cervical lymphadenopathy. Rounded superficial erosions appear on the cornea. These gradually coalesce forming the typical dendritic figure. Fortunately the cornea is not the usual site for a primary infection since the reaction is usually severe.

This runs its course in two to three weeks, at which time it heals leaving a slight scar. A circulating antibody titer can be obtained in thirty days, reaching its peak in sixty days.

Recurrent dendritic keratitis.—This is the most commonly seen type. The virus which has been lying dormant in the nucleus of the epithilial cells is suddenly released. The nucleus is surrounded by a rather dense nuclear membrane so this must be destroyed or injured in some way to permit the virus to escape. The actual release mechanism is unknown at present. After its release, the virus may be neutralized by the tissue antibodies and the disease fail to develop. One can see the importance of the balance between the virus and the tissue antibodies. Cortisone may have some action in destroying this local immunity. If, however, the neutralization fails, a

dendritic ulcer develops. Clinically, the corneal lesions first appear as a group of whitish nodules on the epithelium with a slight grey infiltrate at the base. These nodules may take a faint fluorescein stain. Soon there appears the typical dendritic pattern. The usual case runs its course in one to two weeks, leaving some scarring.

Disciform.—Occasionally one to one and one-half weeks after the start of the herpes infection, there occur corneal stromal edema and folds in Descemet's membrane. This progresses to produce round, whitish, stromal opacities, keratitic precipitates, and low-grade uveitis. Interestingly, this type of reaction can also occur with some other virus diseases—chicken pox, vaccinia, superficial punctate keratitis, herpes zoster, mumps and small pox. The question arises as to whether this reaction is due to the virus of the specific disease or an actual corneal invasion by herpes simplex. However, the tissue involved is collagen and not epithelial so the exact nature remains unknown. Braley[4] believes it to be due to a hypersensitivity to the herpes virus.

Metaherpetica.—Usually herpes runs its course and heals, but occasionally it becomes chronic. This results in a diffuse breakdown of the corneal epithelium. Indeed, in some cases even bullae develop. The epithelium is no longer adherent to Bowman's[5] membrane and in some cases it is lost. This type of reaction may drag on for months. Apparently the local antibodies do not neutralize the virus.

Diagnosis

1. *Clinical.*—This diagnosis is made by finding the typical pictures described above. Sometimes this is difficult so a more accurate laboratory method is often needed.

2. *Laboratory.* (a) Microscopic. The finding of the typical unilocular vesicle in the epithilial cell is diagnostic. This progresses to ulceration and the formation of multinucleate cells and acidophilic intranuclear inclusion bodies.

(b) Isolation. To obtain more positive results this must be done in the acute stage. The fluid from a vesicle is inoculated into susceptible cells of animals and the typical reaction of focal necrosis and intranuclear inclusion bodies is found.

(c) Serology. The complement fixation test is important in the primary case, since one finds a specific increase in the antibody titer. This is not true in the recurrent type.

Treatment

Treatment of herpes simplex is most difficult and frustrating. Searching through the literature, one finds that the problems existing early in the history of the disease still exist today. Following is a partial list of the antibiotic and chemotherapeutic agents which various investigators have experimented with and found wanting:[5-9] aureomycin, achromycin, chloromycetin, erythromycin, magnamycin, terramycin, someatatropic hormone, DOCA, estrogenic and androgenic hormones, and influenza vaccine. From the length of the list, one can conclude the problem remains a great one.

The specific treatment for the various facets of herpes as found most effective by most individuals today follows:

Dendritic ulcer.—The cornea is anesthetized with ½ per cent pontocaine hydrochloride and the area of the dendritic ulcer plus 2 mm. is painted with one-half strength tincture of iodine. After the iodine has been in contact with the cornea one to two minutes, it is neutralized with 4 per cent cocaine. One per cent atropine and a local antibiotic solution are instilled and the eye occluded. The pain is controlled by A.S.A. gr. X or codeine grss. Cortisone is contraindicated and may lead to perforation of the cornea.

Disciform and metaherpetica.—The treatment of these complications is extremely difficult. Braley feels that cortisone is of value in disciform keratitis since a hypersensitivity to the herpes virus exists. A solution of 1 per cent sodium iodide with 5 mm. of Lugol's solution per 30 cc. used four times a day should be given a trial. Local antibiotic drops should also be used to prevent any secondary infection. Occlusion for a prolonged period should be tried. Some investigators feel that repeated vaccinia vaccinations have some benefit, but this certainly is not accepted by everyone.

If all these fail and the eye seems to be progressing towards blindness, irradiation should be used. There is no good reason why irradiation should be of value in the treatment of herpes, therefore, it should be used only when all other ave-

nues have been exhausted and only then with absolute patient safety.

Low voltage therapy (x-ray).[10]—This type is used only when the disease is extensive. The whole eye is irradiated through the closed lid. A 10 r., 45 K.V., dose is used once or twice a week for four weeks. If at the end of the four weeks the eye is quiet and comfortable the treatment can be stopped. If, however, the eye is white but the corneal ulcer still remains, the switch to Beta irradiation should be made. If no improvement is noted all irradiation should cease.

Beta irradiation.—This is used in the chronic lesions involving the cornea. The cornea only is irradiated as the applicator is applied directly to it. It is not used when severe lid spasm is present or when a marked ciliary congestion exists, since the dose may prove excessive and produce exacerbations of the symptoms. A single dose of 500 r. once a week for four weeks is used. The Strontium applicator is one of choice at present.

The difference between the dosage schedules of the Beta x-ray is due mainly to the difference in the penetrating power of the rays and the volume of the tissue irradiated. There should be no complication if the above set of standards is adhered to.

Results of irradiation at the Royal Marsden Hospital are shown in the accompanying table.[10]

The number of patients in this series is small, some experienced spontaneous regression, et cetera, so that evaluation is difficult but it does appear that irradiation is of some value especially when one considers that these were cases where all other therapy had been to no avail.

It is evident from the above, then, that the therapy lags behind our understanding of the biology of herpes simplex.

RESULTS OF IRRADIATION

Type	Treated	Relieved	Improved	Failed
Dendritic	20	3	10	7
Disciform	16	3	7	6

Summary

In summary, the natural history, clinical aspects, diagnosis, and the treatment of herpes simplex has been discussed. It appears that the primary disease acts like any infectious disease. Our knowledge of the recurrent type has many gaps.

Treatment of herpes simplex remains one of our most troublesome problems, the solution of which is not found in the antibiotics or chemotherapeutics at our disposal at this time. We must look to future research for the final answer. Let us hope the puzzle will soon be solved.

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Use of Relaxin in Obstetrics

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WITHIN the past year, a hormone known as relaxin has been put on the market. Although it is, in a manner, still in an investigative status, the suggestion is that it will be an important drug in obstetrics.

The purpose of this paper is to review the work that has been published on this hormone and present a study that Dr. Paul Larson, Dr. Edgar Ingalls and myself have made on its use in spontaneous labor at term.

History

The history of relaxin began thirty-two years ago when Dr. Fredrich Hisaw observed that the narrow pubic bones of the female pocket gopher were resorbed in the adult stage to make bearing of young anatomically possible. In the ensuing years he was finally able to isolate the responsible factor as a water-soluble protein which was secreted by the corpus luteum. He described the substance as a "relaxing hormone" and later called it relaxin. Further investigation showed that this third ovarian hormone caused diminished contractions of rat uteri and increased the dilatability of cow's uterine cervix.

Studies then turned to the human where it was found by Pammerenke that relaxin was present in the serum of pregnant women. Penkoff and his associates demonstrated the safety of administration, even in very large doses.

The problem of supply has been difficult. To date, extraction of the hormone from sows' ovaries has been the only source. Some 200 pairs of such ovaries are necessary for one course of treatment in a threatened premature labor, thus, its high cost. Efforts are being made to produce the drug synthetically. The price in the past month has been reduced to one fourth of its original high cost.

The story of relaxin's development has been another noteworthy example of the long and arduous efforts of research investigators to add to our knowledge and armamentarium of treatments.

Consideration has been given to the use of relaxin as a means of halting premature labor, of softening the cervix in prolonged labor or in preparation for induction of labor, and to shorten spontaneous labor in the term pregnancy.

Abramson and Reid first reported its use in premature labor, citing prolongation of gestation to thirty-six or more weeks in five such cases.

Folsome, et al reported, in the August, 1956, issue of *Obstetrics and Gynecology,* a delay of labor in twenty-two out of forty women in premature labor. A total of 936 additional days of gestation were obtained with a fetal loss rate of 25 per cent compared to 86 per cent in the control series. The dosage schedule used was varied, but settled on a regime of 80 mgm. (or 4 cc.) intramuscularly as the initial dose and 40 mgm. (or 2 cc.) at four-hour intervals for forty-eight hours following cessation of contractions. Conclusions were that relaxin was of help in halting premature labor especially in the twenty-ninth through the thirty-second weeks of pregnancy.

McCarthy et al. from the University of Pittsburg reported in the *American Journal of Obstetrics and Gynecology,* July, 1957, issue, a series of fifteen cases of premature labor at twenty-four to thirty-four weeks with an average of thirty weeks. In eight cases, labor was prolonged more than one week; whereas, in his control, only one pregnancy continued for more than one week. In the remaining seven, three had placental pathology and the other four had ruptured membranes. Two of their group with ruptured membranes developed intrapartum fevers and both babies died. They concluded that relaxin does have an inhibiting effect on premature uterine contractions, but that it appears to be contraindicated in the presence of premature rupture of membranes and in cases where placental pathology or severe maternal complications, such as toxemia, are present.

We have only used relaxin for this purpose in one case—that of a decompensated cardiac pa-

tient from out of town who was referred in to a local internist. This primigravida patient was 2 cm. dilated and judged to be in active labor. Labor was halted in this instance.

The second suggested use of relaxin in obstetrics is to soften a thick, firm cervix of a patient in prolonged labor or to prepare for induction of labor. Eichner described such softening of the cervix "in almost all" of the seventy-eight

TABLE I. COMPARISON OF TIME INTERVAL
4 to 5 cm. up to 10 cm.

Hours	Releasin	Control
½-1	4	3
1-2	9	11
2-3	4	5
3-4	3	1
4-5	0	2
5-6	1	2
6	4	1
Total cases	25	25

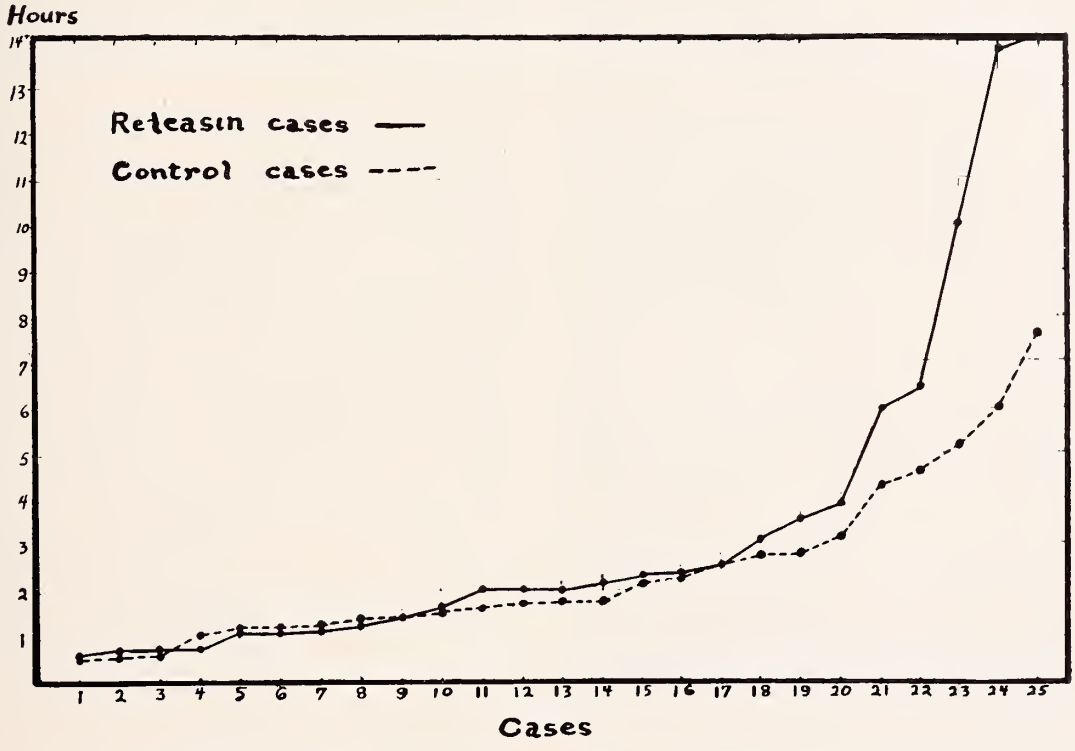


Fig. 1. Comparison of time interval in labor (4 to 5 cm. up to 10 cm.) in fifty cases.

patients in whom he studied the effects of using relaxin. A true appraisal of this effect would obviously be most difficult.

Third, it has been suggested that the use of relaxin might shorten labor by its effect upon the cervix and the pelvis as noted in animals by research teams. In one report, it was the impression of the observer that its use produced "precipitous deliveries." Because of this observation, the Warner-Chilcott people desired to know if this was actually true. We were asked if we would wish to give Releasin (their proprietary name for relaxin) a clinical trial. Such an evaluation has obvious problems. Criteria for a study were set up to include only primigravida patients of thirty-seven to forty-three weeks gestation in whom labor had started spontaneously. Malpositions and multiple pregnancies were excluded. Demerol and Scopolamine were used as the only other drug, and the administration preceded the use of the Releasin in all cases. The dosage of Releasin was 20 mgm. (or 1 cc.) intramuscularly at 4 to 5 cm. dilatation repeated at three-hour intervals until dilatation was complete. Contractions had to be at intervals of three minutes or less and lasting forty-five seconds or more. The range of dilatation was allowed because it would be obviously impossible to accurately determine a specific dilatation, and, furthermore, it would be impossible to time the examination that precisely. An obstetrical resident was on hand to follow and check any questionable findings by vaginal examination. Here, I would like to give credit to to Dr. Evan Constantine, a resident on obstetrics at Northwestern Hospital, for his conscientious efforts and to Dr. Angel Perez who worked with him.

Method and Results

Fifty consecutive cases were thus compiled with the exception of a breech, a twin pregnancy, a face presentation and two cases in which dilitation had exceeded the limit before recognition. Alternate patients were given the Releasin. When patients were determined completely dilated, they were transferred to the delivery room where vaginal examination was done.

The time interval from administration of Releasin at 4 to 5 cm. up to 10 cm. was compared with the corresponding period in the control group (Table I).

There were thirteen in the Releasin group and fourteen in the control group who had a moderately rapid course (two hours or less) in the second half of the cervical dilatation and seven in the Releasin group and six in the control group whose course was average (two to four hours in length).

Figure 1 illustrates the length of labor of the individual cases in the Releasin group by the solid line and the control group by the dotted line. The two curves begin with the shortest labor in each group.

The impression gained is that there is no notable difference in the length of time between the two groups. The suggestion is that relaxin does not shorten the course of labor when administered after effacement has been completed and dilatation started.

No systemic ill effects were noted following administration of Releasin. No effort was made to compare the second stages of labor, but the impression was that there was no notable difference.

Previous reports have described a temporary decrease in uterine contractions following its use. This was not definitely apparent in our series. In only one instance was there a significant change; while in six others, there was a slight decrease. The Demerol-Scopolamine, administered shortly before, could have been the factor responsible. Kelley, using an electric intrauterine tocometer, measured the contractile pressures in the fundus, isthmus and cervix in twenty-five patients at term who had received Releasin during labor—only one showed decreased contractile pressure. Dosages of up to 320 mgm. were used.

Summary

In summary, one might say that relaxin is of help in halting premature labor except in cases with placental pathology. Second, in the case of premature rupture of the membranes associated with labor, the inhibiting of contractions may predispose to intrauterine infection, thus the advisability of the use of relaxin in such instances should be carefully considered. Third, the suggested ripening of the cervix would certainly be of value in cases where induction of labor is desired or where spontaneous labor has occurred in the presence of a firm thick cervical structure. However, this possible effect from relaxin has not had a thorough clinical evaluation. Last, relaxin does *not* seem to be of value in shortening the labor in those cases where effacement has been completed and dilatation has started, at least in the dosage we used in this survey.

Clinical investigation of this extract is continuing. New uses are now in the process of being investigated according to the people from Warner-Chilcott. No doubt, we will hear more about relaxin in the future.

DEAFNESS IN CHILDREN

All children who do not react to sound, do not copy speech or do not speak articulately from the time they are two years old should be examined to find the cause, Dr. G. Koenig told the Society of Physicians at the recent annual meeting in Vienna. A fairly accurate audiogram can be made for children at age two, but better results are obtained after they reach the age of three.

If a hearing defect is discovered, the child should be given special articulation exercises. Later systematic hearing training is advised. As soon as the child reacts to hearing impressions, a hearing aid is provided. Even in children with no residual hearing but with normal intelligence a primitive phonetic communication may be achieved.—Foreign Letters, *J.A.M.A.*, June 14, 1958.

The Patient with Hip Fracture

Surgical Care

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FRACTURES in the aging population become more of a problem with increased life expectancy. The most frequent and most disabling fracture is that of the hip. It is a physical and emotional disaster to the patient and an economic liability to his family and/or the community.

The catastrophe can be minimized by skillful handling. Poor handling is associated with prolonged morbidity and invalidism.

This article is concerned with the current blind hip-nailing technique of an orthopaedic surgeon. The overall care from injury to rehabilitation is presented. One specific surgical technique for the intracapsular fractures and one for the intertrochanteric fractures are outlined. Exceptions to the technique are impacted intracapsular fractures, undisplaced intertrochanteric fractures not requiring surgery, irreducible intracapsular fractures requiring open reduction, and the extensively comminuted intertrochanteric fractures best handled by continuous traction.

Initially, the fracture is a closed (simple) one. Open surgery exposes the fracture to hazard of infection. The infection rate should not exceed five per cent even in the aged. Large series reported suggest that 90 to 95 per cent of the intertrochanteric fractures should heal with satisfactory function. In intracapsular fractures, internal fixation should give 60 to 70 per cent good results. Non-union and aseptic necrosis of the head are the great problems in intracapsular fractures. Because no prosthesis functions better than the patient's healed femoral head, immediate prosthetic replacement in acute fracture is not advocated.

The Diagnosis

The diagnosis is usually easy. The patient is unable to lift the involved extremity. It is painful to passive motion, shortened, and externally rotated. The patient is moved to the hospital by ambulance where pelvic x-ray and a lateral x-ray of the injured hip are taken. There is gross displacement in the majority of patients. When the fracture is diagnosed clinically but not confirmed radiologically, the patient can be treated expectantly. As soft tissue pain relents, further x-ray studies will confirm the diagnosis. Fractures of the pubic rami and acetabulum may be indiscernible clinically from the intracapsular and the intertrochanteric hip fractures.

Any displaced fractured hip should be considered for early operative fixation. Operation within twenty-four hours of the injury has been found best for the patient. Barring cerebral stroke as the cause of the fall, the patient is probably in his best general health the moment prior to the injury. With minimal supportive care after a routine history and physical examination an acceptable operative condition can be achieved for the patient.

Preoperative Preparation

Physical changes associated with age are assessed. Special attention is given the cerebral, cardiovascular, hemopoietic, pulmonary, and endocrine systems. Routines include blood and urinalysis. The electrocardiogram is frequently ordered. Digitalis and insulin are prescribed as indicated. Part of the preparation may include catheterization and placement of an indwelling catheter.

The hemoglobin concentration in the blood is a misleading figure. If the patient has lain for some hours in pain, he may be dehydrated. The total circulating hemoglobin will appear falsely high. There is no doubt of low hemoglobin when the accurate report is low.

The patient with an intracapsular fracture does not lose much blood into the tissue. The capsule soon fills with blood and prevents further bleeding. The patient with the intertrochanteric fracture often has an extensive swelling of the thigh and purple ecchymosis in the buttock at the first examination. This patient may have lost a pint or two of blood into the thigh as a result of the injury. He may need preoperative transfusion due to blood loss.

Blood should be replaced with caution even in

those with a low hemoglobin. The patient may have been living many years at a level of 10 gm. of hemoglobin. To insist that each patient have at least 11.5 to 12.0 gm. of hemoglobin prior to surgery is not good surgical practice. Heart failure prior to surgery has been precipitated by overloading with blood transfusions. Many patients have come in with an initial reading of 12.0 gm. only to have 9 or 10 gm. after hydration.

The important factors are to look at the patient, evaluate the blood loss due to injury, return that amount, and replace any lost at surgery.

Reduction of Fracture

In reducing the fracture the patient is placed on the fracture table, and the pubic area is firmly approximated to the pelvic post. Traction is held on the sound leg by the assistant in order to stabilize the pelvis (Fig. 1A).

In the intracapsular fracture, the involved leg is further externally rotated with the traction hand applied above the knee at the level of the femoral condyles. The opposite hand may steady the foot from dangling. With the thigh in external rotation, mild to moderate traction is applied. The

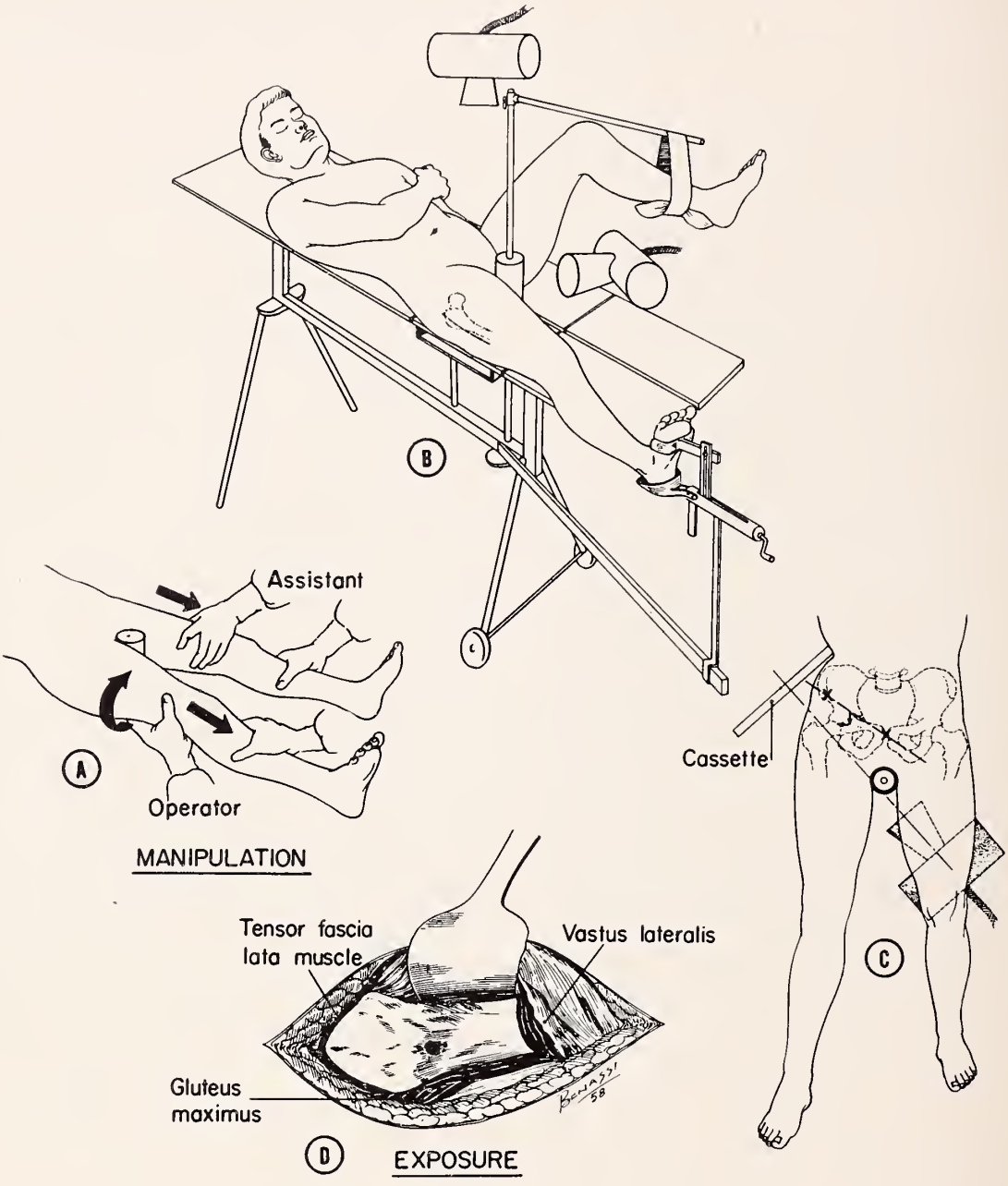


Fig. 1.

younger the individual, the more traction is necessary. During this phase, the whole thigh is jiggled up and down in order to loosen the fracture. When one thinks that he has gained the length of the bone, the thigh is strongly internally rotated. In the intracapsular fractures, this maneuver of internal rotation is quite forceful. All the manipulating force is applied above the knee to prevent straining of the ligaments of the knee. In the intracapsular fractures, the leg is slightly abducted 10 to 20 degrees and the foot is placed in the stirrup with the whole leg in considerable internal rotation (Fig. 1B).

In intertrochanteric fractures, the leg is manipulated in external rotation with longitudinal traction. It is jiggled to loosen the fracture. Internal rotation is not so forceful. In fact, it is probably better to bring the knee to the vertical position, that is, facing the ceiling. It is possible to gain too much internal rotation, especially in comminuted intertrochanteric fractures. Fixation in this position will give a permanent deformity of internal rotation of the leg.

The patient is now ready for x-ray examination to check on the reduction.

Technique of Radiography

Good quality radiographs in the antero-posterior and lateral views are essential. If the lateral view is poor, one cannot be sure of reduction. Further, one cannot be certain of the placement of the internal fixation apparatus. Therefore, this step is fundamental in obtaining satisfactory fixation and final healing. *Incomplete reduction and incomplete fixation, as shown on the lateral projection of the radiographs, are the most common technical errors observed.*

Rather than widely abducting the sound hip and putting the x-ray tube between the legs, more satisfactory radiographs can be obtained by flexing the normal hip almost 90 degrees and the knee to 90 degrees (Fig. 1B). The tube is brought under the normal thigh and directed more toward the head of the patient. In this way, the width of the tissue through which the x-ray must pass is minimized. The x-ray beam is more vertical to the neck and intertrochanteric area of the femur. The antero-posterior view is taken with the tube directly over the hip and the cassette directly under the hip. The head of the femur is localized by drawing an imaginary line between the anterior-superior spine and the pubic symphysis. If one bisects this line, that is, selects a point midway between these two points, drops toward the foot one inch and goes laterally one inch, his finger, for practical purposes, will be over the head of the femur (Fig. 1C). When the lateral view is taken, one should be certain that the cassette is put at right angles to the x-ray beam. The cassette is pushed well into the flank superior to the iliac crest. This technique may be carried out with the use of two x-ray tubes or one. When one tube is used, it necessarily will mean some delay in the procedure. The hip may be scrubbed while waiting for the development of these films.

Anesthesia

The type of anesthesia is best determined by the ability and the custom of the individual in charge of this phase of surgery. It may be sodium pentothal. This may be supplemented by local anesthesia into the hip joint and through the skin and operative area. Some surgeons prefer low spinal block anesthesia. The surgeon should impress upon the individual giving the anesthesia that a minimal amount is desired. There is not much need for relaxation in older people. The problem is different than when the operation involves the abdomen. Once the manipulation is complete the anesthesia can be quite light. If there is any doubt about the minimal general anesthesia, one can infiltrate the operative site with local anesthesia.

Fixation Apparatus

In the intracapsular fractures, it has been my practice to use Moore pins in sets of four, making quadrants of the insertion of these pins (Fig. 2). I have usually used a 5/32 inch pin at the depth of between 3½ and 4½ inches. These pins are available in 5, 6, and 7-inch lengths. The pins are preferred because they are set with the hand drill.

The desired depth of the fixation apparatus in the head in intracapsular fractures is within ⅛ or ¼ inch of the articular surface. Investigations by others have shown that the (a) central or (b) posterior and inferior portions of the head are desirable sites for the placement.

As these are drilled, one penetrates the outer cortex. There is a tendency to push through the intertrochanteric area where there is very little cancellous bone. At about 2½ inches or so, the nail engages the head. If one further drills this nail with increasing resistance into the head a distance of 1 inch, it will be about the right depth in

the head. It is very desirable to have one or two of the inferiorly placed pins, as shown on the antero-posterior view, parallel to and resting on the inferior neck. The position on the inferior neck acts as a support to prevent varus shift on the head by the muscular contraction.

The Smith-Peterson nail has been an acceptable fixation apparatus for intracapsular fractures for many years. It is possible to tilt the head and lose the reduction when driving this nail. Should the nail be used, it is wise to drill a Steinmann pin or stout Kirschner wire superior to anticipated placement of the Smith-Peterson nail. The object of this is to hold the head and neck in the reduced position as the nail is driven into its desired position.

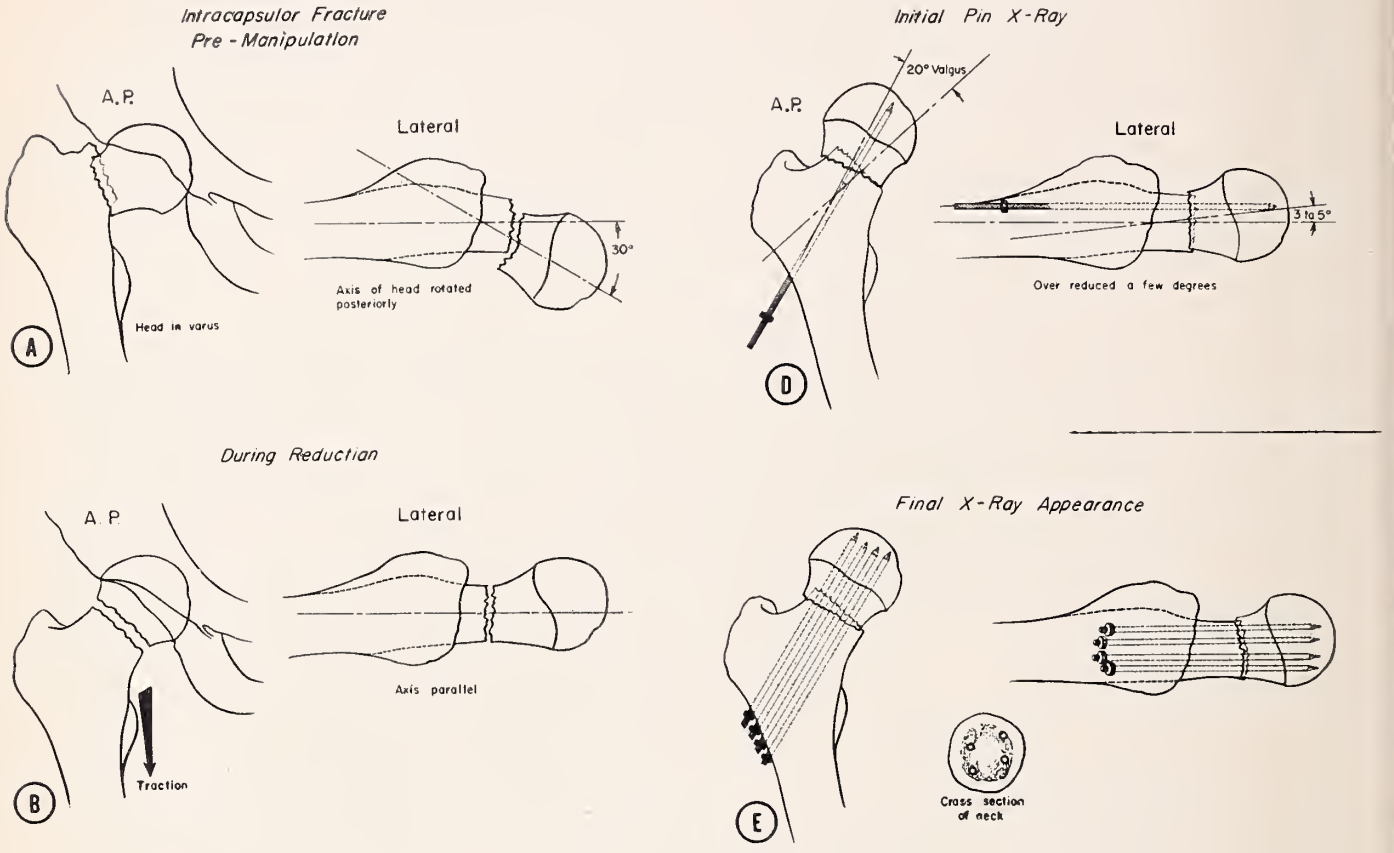


Fig. 2.

In the intertrochanteric fractures, I prefer the use of a fixed angle nail with a multiple hole plate (Jewett nail) (Fig. 3). The length of the plate that goes down the shaft of the femur is dependent on the level of the fracture.

It is preferable to have the nail part of the apparatus go no further than the center of the head. It is safer to keep this nail portion caudad in the antero-posterior view and posterior or central in the lateral view. Because the nail is fixed to the lateral shaft, shortening at the fracture line may permit the pin to penetrate the head and acetabulum (Fig. 4B). This tendency is minimized by keeping the tip of the nail in the center of the head. By holding the nail over the x-ray silhouette, one gets the general idea of the angle of introduction. This is supplemented by observation at surgery.

Other fixation apparatus with the individual nail or screw going into the neck of the femur,

followed by the attachment of a plate along the lateral side of the femoral shaft, is not as reliable a fixation. Great stress occurs at the angle where the neck fixation and plate join. Wood screws and bolts tend to loosen at the angle permitting the head and neck to go into varus in many instances.

Criteria for Adequate Reduction

In intracapsular fractures, the head should be over-reduced to a valgus position. At times, anatomic reduction must be accepted (Fig. 2C). The varus position never should be tolerated. This permits shearing at the fracture site and displacement. *The desired position* of the head on the anteroposterior view is a *valgus position.* This can be obtained in most patients by utilizing a moderate amount of traction with the leg externally rotated and completion of the internal rotation as indicated above. If this is not demonstrated on the radiograph, it is desirable to remanipulate so that the head is in valgus related to the neck. On the lateral projection, the head must be in normal alignment with the neck or even over-internally rotated. If this is not so, or if the radiograph is not clear enough to show this, further radiographs must be taken until one knows definitely the relationship of the head to the neck. Slight internal rotation of the neck on the head is desired. Should the head not be in good position relative to the neck in this intracapsular fracture, manipulation is unsuccessful; the whole procedure should be terminated prior to any incision. If the surgeon is experienced in intra-articular surgery of the hip, an open procedure may be performed. Prosthetic replacement is considered. If the surgeon is not acquainted with intra-articular surgery of the head and neck of the femur, it is better that the attempt at internal fixation be terminated at this time and further surgical consultation be obtained for later reduction and fixation. This is advocated strongly because poor reduction and/or inadequate fixation are worse than none and lead to certain failure. The surgeon must recognize his limitations if he is to render the greatest service. Except under unusual circumstances, transfer of the patient to a larger center is of little hazard.

In the intertrochanteric fracture, the anteroporterior view should show restoration of smooth curves on the shaft and the inferior neck (Fig. 3B and C). The level of the great trochanter should be at its normal position about ½ or ¾ inch below the lateral lip of the acetabulum. Normal can be determined by comparing with the preoperative pelvis radiograph. On the lateral radiograph, there may be some posterior shift of the shaft of the femur at the fracture, especially in heavy thighs. It may be necessary to pull this fragment anteriorly at the time of the open fixation. It is possible to manipulate the intertrochanteric fractures at the operative site through the lateral exposure.

The detached lesser trochanter is not reduced or fixed.

The Exposure

The exposure for blind nailing of both the intracapsular and intertrochanteric fractures is essentially the same, although that for the intertrochanteric is extended further down the thigh (Fig. 1D). A lateral incision is made over the greater trochanter. In the intracapsular fracture, this incision is about 3 to 4 inches long. The fascia lata is exposed, and the tensor fascia muscle is incised for a distance of about 2 inches. When this muscle is found, one is certain that he is in the right level. At this time, one should look for arterial bleeding from division of the lateral femoral circumflex group. The hand is slipped posteriorly to the posterior attachment of the vastus lateralis. This muscle is bluntly dissected from the femur. It is necessary to cut the trochanteric attachment with a pair of scissors a distance from 1 to 2 inches. This will permit the laying anteriorly of the vastus lateralis. This exposes the lateral femoral shaft in the trochanteric area.

Fixation

Intracapsular Fracture.—Austin Moore's pins are used. They are ⅛ or 5/32 inch in diameter, with a pyramidal point which serves as a drill. The shaft is smooth. The shank at the proximal area is threaded for an attached nut. The pin is inserted into a hand drill and drilled into position. When the desired position is obtained, the nut is twisted to the lateral cortex. With the nut tight on the cortex, the pin may be struck to impact the fracture. A heavy bolt cutter is necessary to cut the pin near the nut. The crimping effect of the cutter prevents the nut from coming off. The nut prevents inward migration of the pin.

The first pin is inserted by drilling through the lateral cortex at an angle anticipated to engage the head in its (a) *central* or (b) *inferior* and posterior position. Radiographs in the anteroposterior and lateral views are taken. After study of the actual position of the pin and its ideal posi-

tion, one can insert one, two, or three more. Radiographs are taken to guide the operator in proper positioning and depth of insertion (Fig. 2D and E). After stabilizing the head with one or two pins, the fracture is impacted by blows on the lateral trochanteric area.

Four Moore pins are used in parallel to form quadrants in the neck and head of the femur. Being parallel, there is no binding to prevent the head from settling on the neck as the fracture line is absorbed.

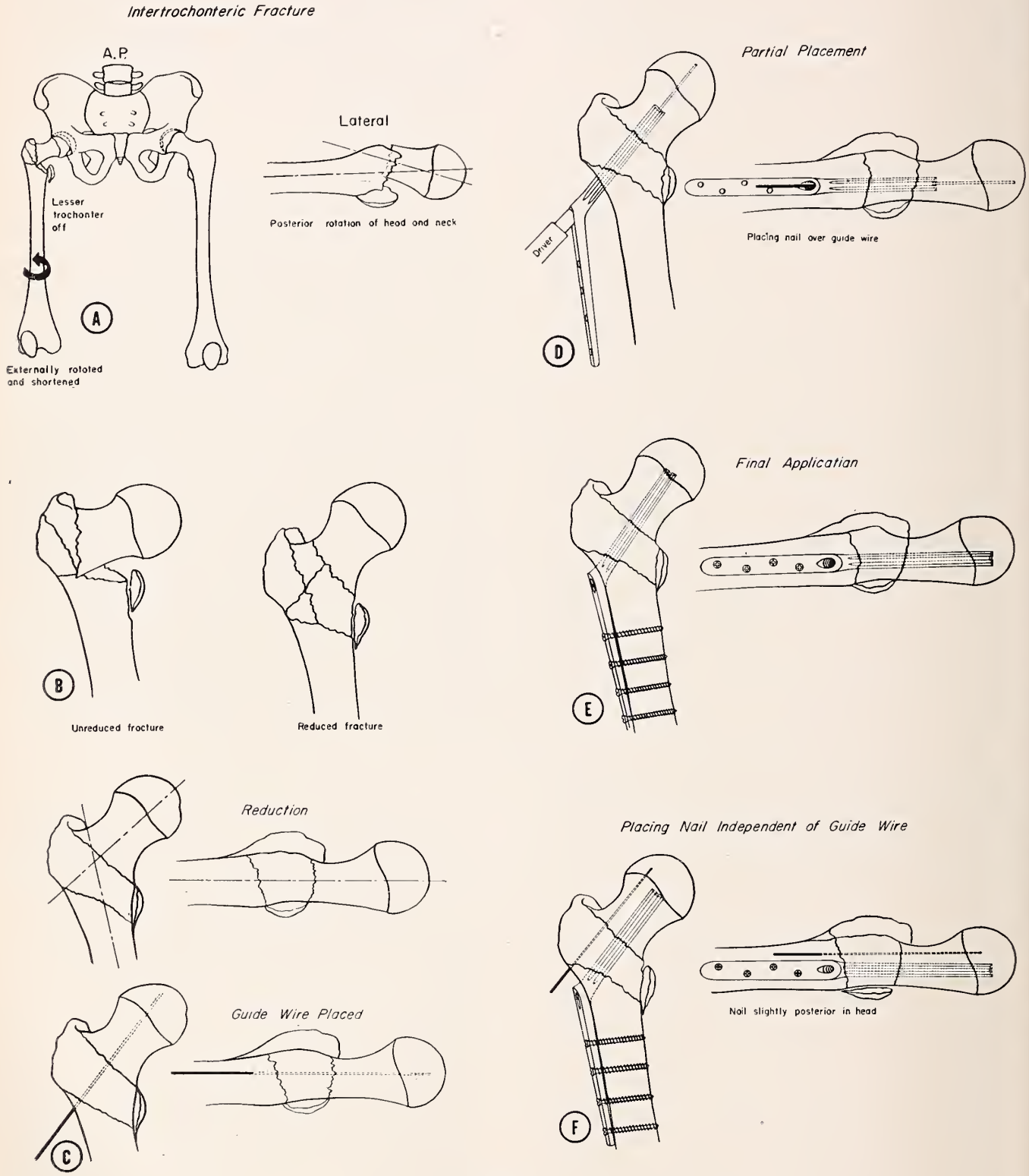


Fig. 3.

Intertrochanteric Fracture.—In the intertro-

chanteric fractures, a drill hole somewhat larger than a Kirschner guide wire is drilled approximately 1 inch below the roughened prominence of the lateral trochanter. Through this opening, a Kirschner wire can be lightly directed into the intertrochanteric and neck area of the hip. One can feel the posterior and anterior cortex of the neck as well as the inferior and superior. He can than judge the direction he wishes to place the wire toward the head. This can be driven or drilled in a depth of about 3½ inches. Antero-posterior and lateral views are taken to determine the proper position of this guide wire. By comparing the length remaining outside the cortex with a full length of normal wire, one can determine easily the depth at which the wire has engaged the head. The desirable nail length can be judged. Usually a 3½-inch Jewett nail is the proper length.

Radiographs in two planes indicate the position of the guide wire. If it is in good position relative to the head and neck and if it is the proper angle for the Jewett nail, a ½-inch hole is reamed in the lateral cortex. This is done with a cannulated reamer directed over the guide wire. The aperature may be made in the lateral cortex with an osteotome. Frequently, the guide wire is not placed perfectly. In such an instance, the cortical opening is made independent of the guide wire opening. The Jewett nail is not guided over the wire but alongside it (Fig. 3F). The nail is tapped 1 inch into the head. Antero-posterior and lateral views show the relationship. The nail should not go beyond the center of the head when completely driven home. Care should be taken to prevent over-drive of the nail in the head. This is especially true in comminuted intertrochanteric fractures. Over-drive pushes the nail into the acetabulum. It does not allow the nail to stay in the head if the fracture shortens (Fig. 4B). In certain comminuted fractures, the Jewett nail acts as a supporting strut between the head and the shaft. The intervening comminuted fragments are unstable and simply encircle the central portion of the Jewett nail.

Fractures involving the subtrochanteric area (area below the less trochanter) have an unstable nature. The plate should be longer than usual. The muscular forces tend to place the whole head, neck, and trochanteric area in varus. Unusual stresses will cause the plate to break at the angle, the screws to break at the plate, or the screws to pull out of the bony cortex. Such internally fixed fractures should be treated with a mild (6 to 8 pounds) skin traction for several weeks. These

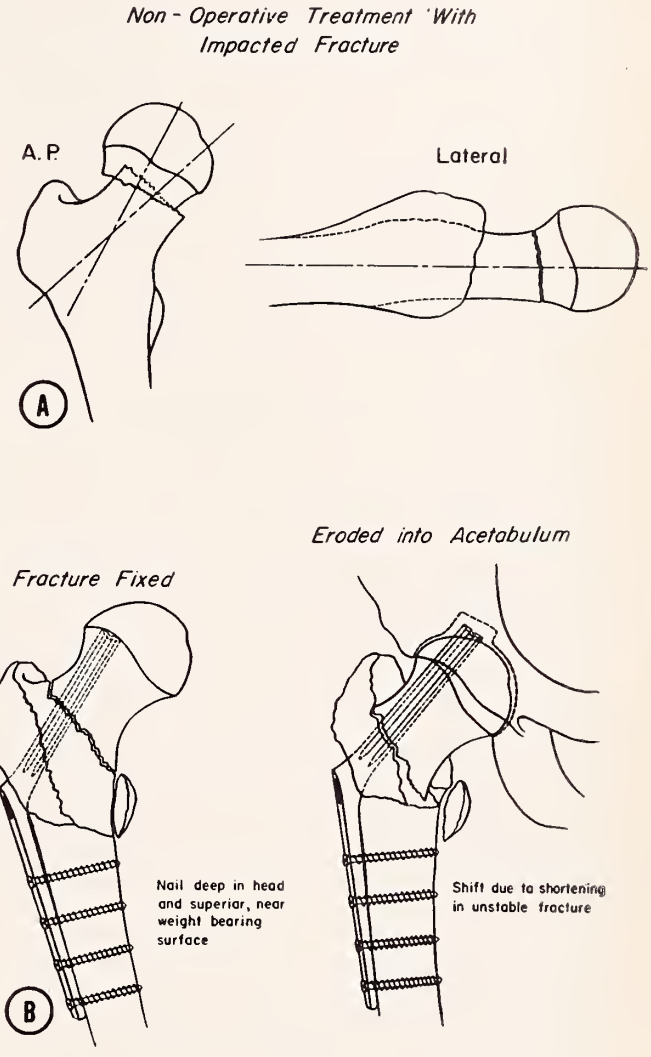


Fig. 4.

patients may be permitted out of bed a few hours a day during the traction period. At all other times, the traction should be maintained.

Non-operative Type Hip Fractures

The abducted impacted intracapsular hip fracture may be treated by non-weight-bearing ambulation. Criteria for selection of cases are demonstrated in Figure 4A. The head should be in valgus in the antero-posterior view. There should be no, or very little, posterior rotation of the head in the lateral view. Clinically, the patient should have considerably less pain than one with a displaced fracture. Many patients having impacted fractures come in a few days after injury, having walked a variable amount on the hip since the fall.

On examination, the patient can lift the whole extremity against gravity. Internal and external rotations are not greatly restricted.

Those with impacted intracapsular fractures are gotten into wheel chairs in a few days. If in moderate pain, 5 to 8 pounds of longitudinal traction may be used a few days. Radiographs are taken at weekly intervals to guide the treatment. Should there be a slow or sudden change in the position, immediate operative fixation with Moore pins is considered. In cases of doubt, the tendency is to insert the Moore pins. Impacted fractures in good position have been disimpacted and rotated while driving the Smith-Peterson nail. Avascular necrosis and non-union are unusual in these impacted fractures.

Follow-up care is similar to that of the fracture which has been reduced and internally fixed.

Occasionally, one sees a non-displaced linear fracture in the intertrochanteric area. This may be treated in traction with daily leniency in getting out of bed, in a chair or with crutches.

Grossly comminuted intertrochanteric fractures may not be amenable to structurally strong internal fixation. If internal fixation will not permit freedom with wheel chair or crutches, operative intervention may be of no value, or even detrimental. In such cases, initial decision for continuous traction until the healing is sound is the best treatment. Ten to fourteen weeks is sufficient for bony healing. Architecturally unstable fractures are often fixed to permit ambulation which may be life-saving. The fracture may shorten, causing the Jewett nail to penetrate the head and acetabulum (Fig. 4B). When the bone is consolidated, the nail may be removed.

Postoperative Care

Routine treatment includes getting the patient out of bed in a day or two. Elastic stockings are advised when the patient is sitting. While the patient is in bed, special attention is paid to turning him every two hours until he is able to turn himself. An overhead bar or trapeze is a great help. The patient is advised to "chin" himself half a dozen times an hour. Antibiotics are not ordered simply as prophylactic for the operative area. Clinical indications are necessary for their administration.

General medical needs are met in the usual fashion. Common problems are mental, cardiac, pulmonary, enteric and urinary.

Mental problems may have been great for the patient prior to the hip injury. Confusion, disorientation, insomnia, and discouragement are common. The best treatment is early operation and mobilization. Encouragement, good food, and nursing care are important. Some medications are helpful. Daily observation for cerebral thrombosis is made.

The cardiac situation usually is one of abnormality secondary to aging. The heart has withstood all previous troubles and will usually survive the injury and surgical procedure. When heart symptoms have been present, a preliminary electrocardiogram may be made. The patient may be digitalized rapidly, even during the surgery by intravenous digitalizing agents.

Hematologically, the patient may need urgent restoration by transfusion. Iron and vitamins are helpful.

One should constantly look for vascular thrombosis in the extremities. Prophylaxis by active exercise is best. The feet should not be bound by heavy bed clothing. A footboard or cradle to support the bedding is helpful. The normal leg should be moved as much as possible. The foot on the affected side is pumped up and down at regular intervals. Sound fracture fixation will permit the knee and hip motion on the injured side, as the soft tissue soreness subsides in a few days. Anticoagulants are prescribed as indicated but are not given in anticipation of thrombosis.

The diet is increased gradually. Many of the patients must be fed. Regaining of strength is dependent on providing a normal balanced intake. Supplementary proteins and anabolic sex hormones may be helpful. Mild cathartics and enemas are utilized.

A high percentage of the patients have urinary tract infection and/or poor control. Indwelling Foley catheters are used on mildest provocation. Fluids are maintained by mouth or parenterally to assure 500 to 1,000 cc. daily urine output. Urinary antiseptics are administered during the use of the catheter. The catheter is discontinued on a trial basis after a few days.

With the above care, bed sores are not common.

Convalescent Care

Walking with crutches is taught to those who appear strong enough. This is a minority in the age group over seventy years. Non-weight bearing in walkers is not advocated.

Wheel chairs are used for almost every patient. Knees must be flexed to right angles when the patient is in the chair. Feet are in a functional position on the foot rest.

Motion of the legs without weight-bearing is encouraged by the patient sitting in a walker and scooting about.

Each patient is encouraged to lie face down in bed two or three times a day for ten to thirty minutes. The purpose is to stretch the anterior hip structures and maintain the ability to extend the hips. Prolonged recumbency and sitting tend to contract the hip flexor area so that folk cannot stand straight when the bone is healed.

Hip exercises are advised for patients who are expected to become ambulatory. These are started on a firm surface in three or four weeks after surgery. The patient is recumbent. He lifts and lowers the whole lower extremity with the knee straight. While lying on his back, he can strengthen the hip flexors. While lying on the side of the normal hip, the abductors are exercised. Extension of the extremity in face-down position strengthens the spine and hip extensors. The patient is informed that:

1. Exercise hastens healing by improving circulation.
2. Exercise strengthens the muscles used in walking. Indeed, hip muscles that cannot exercise the limb against gravity will not be able to stabilize and hold the body on weight bearing.
3. Exercise helps the overall body economy.

Criteria for Bony Healing

Radiographs of the hip in the antero-posterior and lateral positions are taken in office, hospital or home (portable units) at four to six-week intervals. Standard positions are essential for comparing radiographs.

Intracapsular Fractures.—With each visit, the doctor should note increased function in the whole extremity, whether union is progressing, and whether the patient is helping himself.

The radiograph at monthly intervals will show some femoral neck shortening and extrusion of the pins at the lateral femoral shaft. An individual pin may drop out farther than normal neck shortening requires. Bursal formation or hematoma laterally suggests extrusion of a pin. When this happens, one must suspect motion at the fracture site and delayed healing. If all pins begin to extrude from the head, one should re-evaluate the need for surgical intervention, such as osteotomy, to change the fracture line to one of impacting forces rather than shearing forces of vertical fracture. Decision should be made before the fracture relationship falls apart. Loose pins are removed using local anesthesia.

The hip is considered undergoing satisfactory healing if:

1. The head is still in valgus.
2. The neck is underneath the head supporting the head.
3. The pins are extruding normally in the trochanteric area as the neck shortens.
4. Bone is in continuity at the fracture line.
5. Metal is in the operative relationship and not loosening in the head and shaft.
6. Lateral radiographs show reduction maintained.
7. No signs of avascular necrosis are found in the head.

When the clinical and x-ray findings suggest satisfactory progress, partial weight bearing may be started four months postoperatively.

In those patients originally thought to be healing but where the neck continues to shorten, one suspects fibrous union. This is usually accompanied by increasing varus of the head. Such patients should be taken off weight bearing; they usually complain of hip pain. Evaluation should be made of osteotomy to change the fracture angle. Bone grafting may be performed.

Condensation of bone at the fracture line suggests osteonecrosis and neck collapse.

When monthly radiographs show progressive healing, greater function and more weight bearing are permitted. Intervals for general and x-ray examination are lengthened. Prognosis should be guarded even in face of apparent success. This caution is followed pending late vascular and arthritic changes in the head.

Intertrochanteric Fractures.—The intertrochanteric fracture is usually healed firmly enough for beginning weight bearing in ten to twelve weeks. The patient should be able to maneuver the hip and leg as union is occurring. Pain will be minimized. Motion should be about three-fourths normal.

The radiographs should be compared serially. Healing is progressing if:

1. The relative position of the fragments and the fixation metal have not changed appreciably.

2. The nail does not penetrate the head into the acetabulum.

3. The plate or screws are not broken.

4. The metal has not shifted or loosened in the bone.

5. Softening of the fracture line and callus are seen.

6. New bone formation is prolific.

If one feels that bony union is present, weight bearing may be started while support is aided by crutches or walker. At first 25 to 50 pounds of weight is advised. The patient may get the sensation of the right amount of weight to be placed on the foot by testing the prescribed weight bearing on the bathroom scale. Usually, discomfort in the knee, foot, and ankle will prevent overuse. As time goes by, weight may be increased.

The next radiograph in four to six weeks is used to determine the increase in function. This should show further callus and no change in the position of the fragments and metal fixation.

Should the nail penetrate the head, the nail may be removed after the fracture is healed.

Increased function is deferred, if there is doubt as to union.

Comment

The surgeon should become adept at one or two methods for reduction of each, the intracapsular and the intertrochanteric fractures.

The surgeon should analyze his hip patients generally and specifically prior to surgery. He must be sure of his help and equipment. When he is confident that the fracture is one which he can handle competently, he may proceed. When the fracture appears unusual or complicated, he should seek help. Although fixation within twenty-four hours of injury is advocated to avoid severe complications, early poor surgery is a greater hazard. The patient can tolerate an ambulance ride better than he can inefficient surgery.

The frequent occurrence of hip fracture in an aging population necessitates efficient surgery throughout the state. In smaller centers, it is suggested that one or two surgeons develop special skill in the handling of hip fractures.

The primary operator in hip surgery has the best opportunity for success. He must be able to accomplish good reduction and fixation. When such services are not available, the patient should be transferred elsewhere.

Care is not complete with soft tissue healing. Success is not achieved because the patient survives the fracture and operation for several months.

The patient has a successful result when he is able to walk and resume normal activities. Certainly, some patients will have a limp due to muscle atrophy. There will be a mild limitation of motion. The patient may need a cane or crutch for balance.

Hip fracture is a devastating injury. Early fixation and mobilization minimize its toll.

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AIR POLLUTION AND THE PUBLIC HEALTH

Air pollution is a problem resulting usually from population pressure. The steady increase in the demand for energy has had a profound effect upon fuel resources, which in turn affect pollution by discharge of man-made pollutants into the atmosphere. In the United States, our energy demand is increasing at 3 per cent annually which is apportioned at about 32 per cent for heating (and cooling), 11 per cent for process heating, and 57 per cent for work heat (power stations, etc.)

Within the last thirty years, we have had three severe fog disasters—Meuse Valley in 1930, Donora (Pennsylvania) in 1948, and London in 1952. In each case, the air temperature was close to freezing; the period of stagnation and temperature inversion was natural and expected from time to time.

Britain's prolonged fogs are infrequent although undeniably serious from a public health standpoint. Los Angeles' troubles occur some forty to eighty times a year, and only in warm weather. Los Angeles has shown that its chemical "smogs" are linked up with the exhaust gases from automobiles and chimney discharges from power stations. The chief offender seems to be the nitrogen oxides, products of combustion both from motor vehicles and from industrial processes.

In Britain, sulfur dioxide is recognized as an expected contaminant of power plant effluents and concentrations are controlled by scrubbers or by special absorbers. It is natural, therefore, that newer industries, like petroleum refineries, should take warning from the edicts against excess sulfur dioxide. The refineries in our west, particularly in the Los Angeles basin, began desulfuring their petroleum before public opinion suggested it.

Damage to vegetation by pollution has been a serious problem in the United States. In modern cities such as Los Angeles, London and Paris, damage to plant life can occur when gasoline consumption exceeds a definite figure. In Los Angeles, this critical figure was reached about 1944 and is now being attained in London and in Paris.

Clearly, the problem is rendered more acute by population pressures and by the multitude of activities which such pressures engender.—Philip Drinker, D.Sc., School of Public Health, Harvard University.

Fluid, Electrolyte and Nutritional Requirements in the Average Surgical Patient

A Statistical Analysis

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FOR A number of years we have been interested in the problem of complete parenteral nutrition in surgical patients. The purpose of this paper is to give a brief run-down on some of the observations which have been made in our laboratory.[1-3]

Balance studies were done on approximately 100 patients who were fed parenterally for a total of 488 patient days. Statisical analyses were used in the construction of the graphs.

Fluid Requirements.—In Figure 1, the 45° line (the line of equivalence) defines equal values of intake and output. The scatter points each represent a combined intake-output value for the variable of reference on one day of observation. The heavy straight line (the least squares regression line) is the best fitting straight line to indicate the average relationship of output to intake. This line should agree essentially with the empirical regression line (the dotted line).

In this graph it is shown, at the point at which these two lines cross (the line of equivalence and the least squares regression line) that the average optimum fluid requirement was found to be 2.75 liters per day. The almost self-evident correctness of this figure seems to lend credence to the Figures which will be referred to in subsequent paragraphs.

Nitrogen Requirement.—Figure 2 represents the relationship of output to intake for nitrogen. Though the association between intake and output for nitrogen is of a much lower order (as indicated by the flatter least squares line and the more nearly circular scatter of dots) it was found that the average nitrogen output equals the intake at a daily assimilation of approximately 18 grams.

Without putting it to statistical analysis, because of lack of sufficient data, we seem to see, in this graph, the possibility of constructing a sigmoid type of curve (the broad zippatone line) wherein the nitrogen output-intake relationship would essentially parallel our line of equivalence in the ranges of 12 to 24 grams of nitrogen intake. If this were the case, it would indicate, statistically, that the average nitrogen need could vary between 12 and 24 grams. This surely might be expected, for certainly individual patient differences could account for such variations in the nitrogen needs and nitrogen utilization.

Potassium Requirement.—In Figure 3 we see the output-intake relationship for potassium with the theoretical optimum at approximately 70 mEq. per day.

It is also evident in this graph that the body puts out approximately 50 mEq. of potassium per day regardless of the potassium intake. This is indicated in the lower left square where the proportion of dots (the output) above the line of equivalence is greatly in excess of the dots (the intake) below the equivalence line.

The possibility of a sigmoid curve paralleling the empirical regression line suggests reasonable agreement with our equivalence line between 50 and 100 mEq., indicating thereby that the optimum daily average intake-output relationship, or need, for potassium may vary between 50 and 100 mEq. per day.

Sodium Requirement.—In Figures 4 and 5, the sodium and chloride input-output relationship is balanced at 90 mEq. per day. This suggests the average daily optimum needs.

The empirical regression line is remarkably

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Funds for this study have been provided in part by grants from Baxter Laboratories and Cutter Laboratories.

straight and remarkably approximated throughout by the least squares line. This finding, associated with the tremendous individual intake-output variation from day to day, suggests the possibility

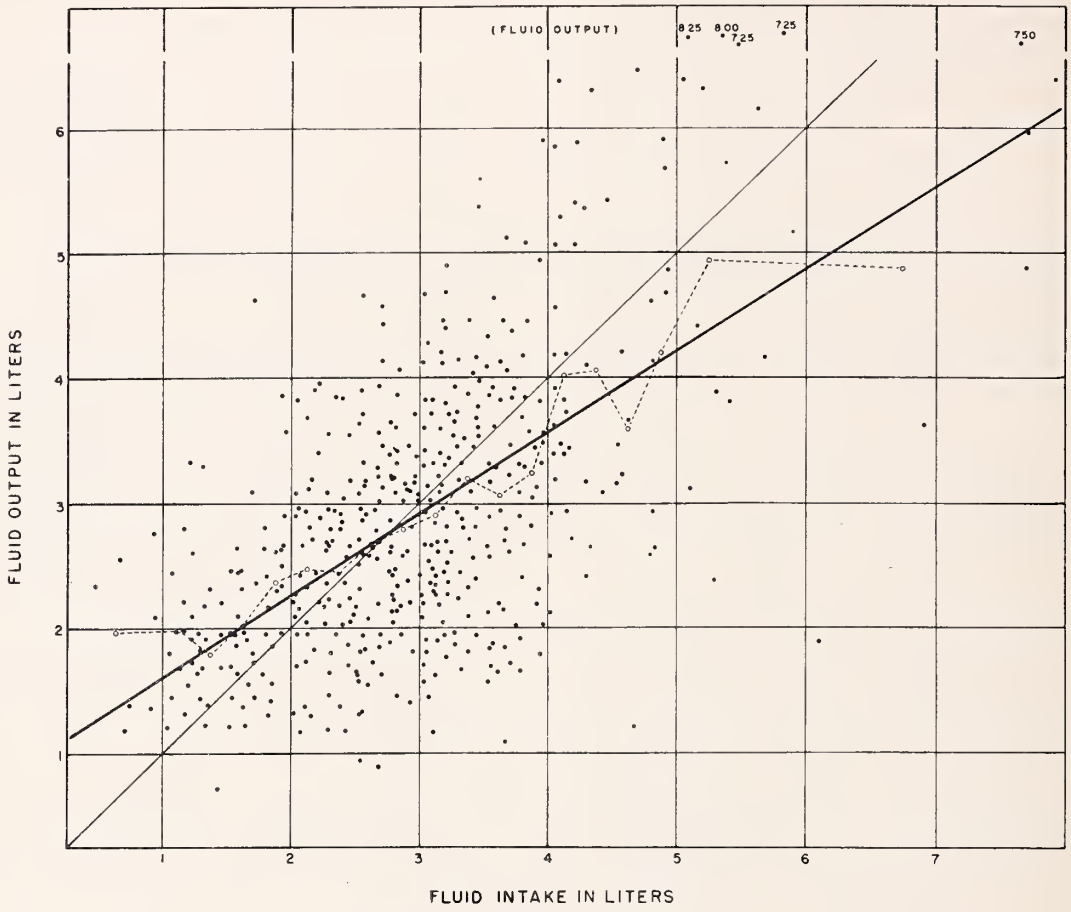


Fig. 1. Fluid Requirements.[4]

of internal shift of sodium and chloride to accommodate for the rapid physiologic demand associated with illness.

Chloride Requirement.—There was, however, slightly greater tendency to retain chloride than there was to retain sodium, as indicated by the increased number of dots below the least squares regression line (Fig. 5).

The Trend Toward Equilibrium.—The primary objective of any parenteral nutrition should be to keep the patient in constant nutritional and electrolyte balance. It is realized that the period of adjustment may be influenced by the patient's condition, his response to treatment and by our technical and clinical inability to determine immediately and accurately his needs.

Accepting these variables, but in an effort to eliminate preconceived ideas, we have endeavored again to use statistical analysis to evaluate the patient's balance status as he passes through time. To determine this the trend toward equilibrium was analyzed progressively from day to day.

A circular scatter of individual determinations would suggest that there was no relationship of output to intake whereas an elliptic scatter paralleling the line of equivalence would indicate a high relationship and, consequently, equilibrium.

It seems unnecessary to illustrate graphically every daily determination as the patients pass through time, for to do so would entail an almost endless number of graphs. A typical example is illustrated in Figure 6, a circular scatter, showing no correlation between intake-output for nitrogen on the day of surgery. Figure 7 shows an elliptic scatter indicating a high relationship for nitrogen on the second postoperative day.

Using this method of statistical analysis it became evident that beginning on the first day of intravenous feeding, in the pre-operative period, there was a tendency for progressively greater

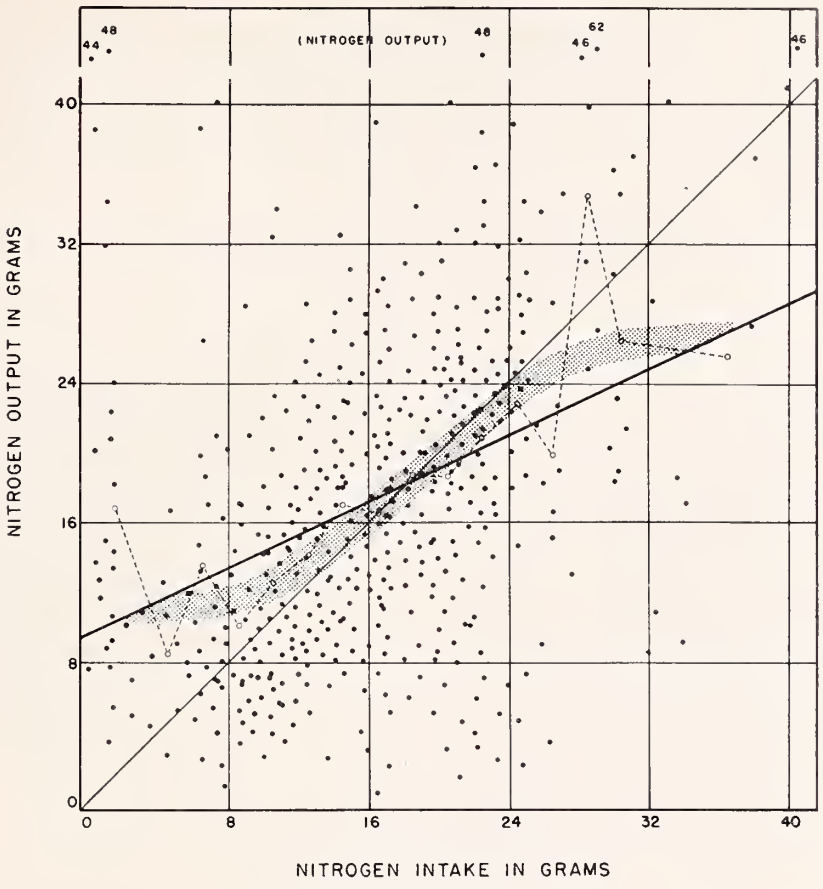


Fig. 2. Nitrogen Requirements.[4]

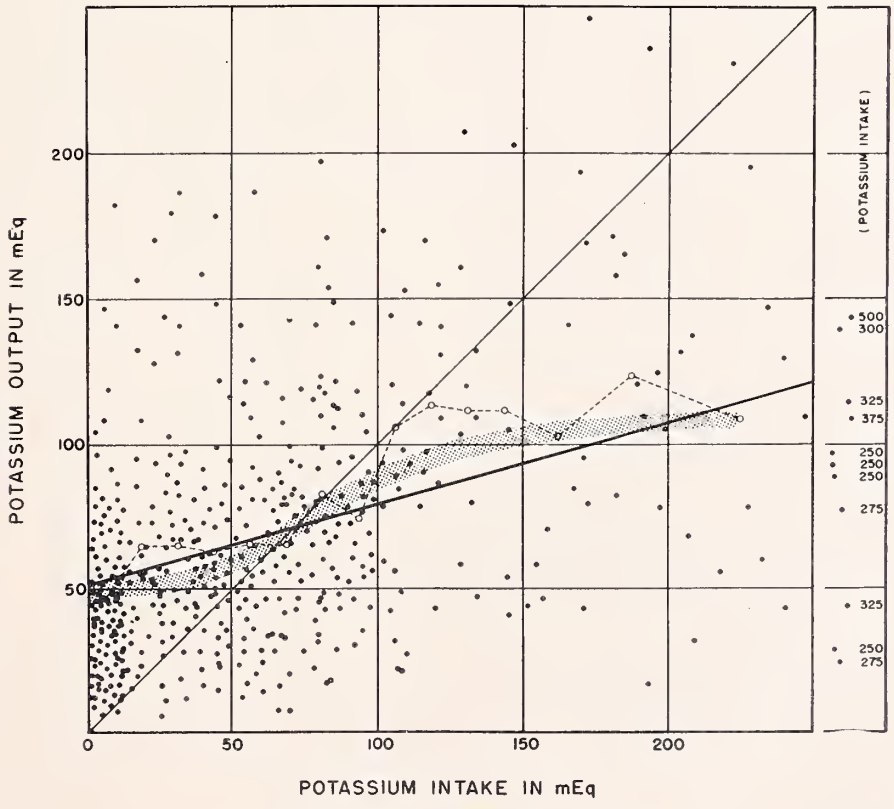


Fig. 3. Potassium Requirements.[4]

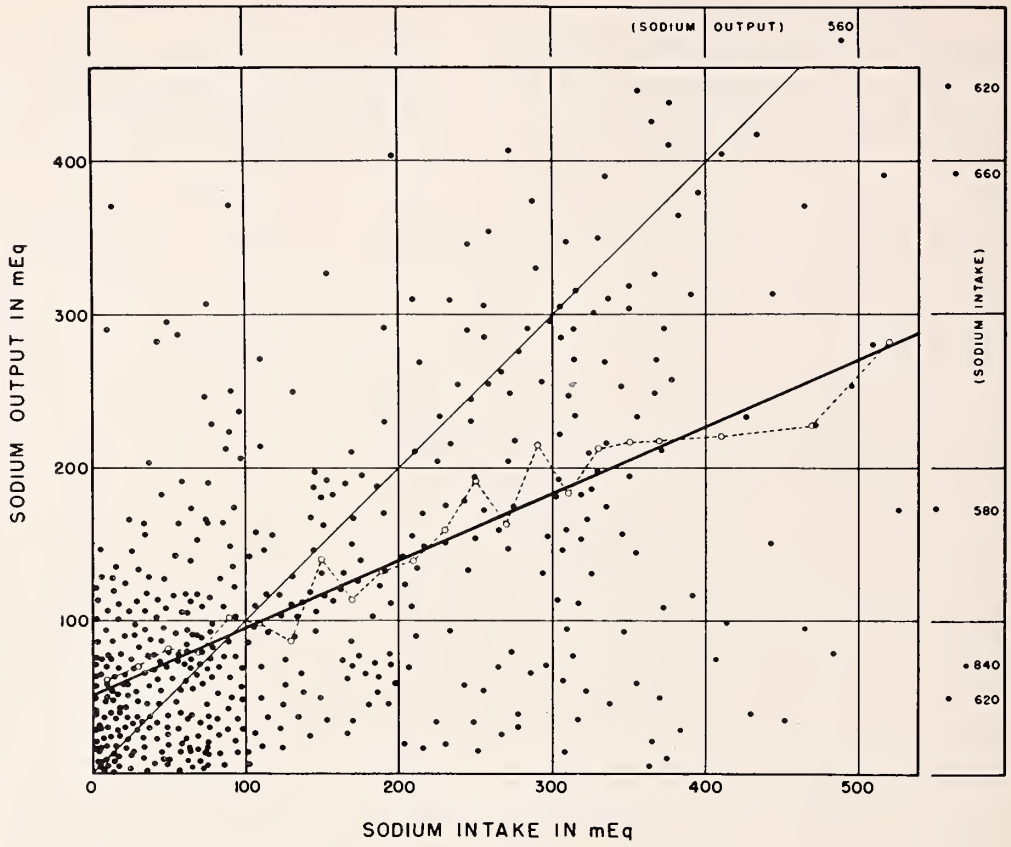


Fig. 4. Sodium Requirements.[4]

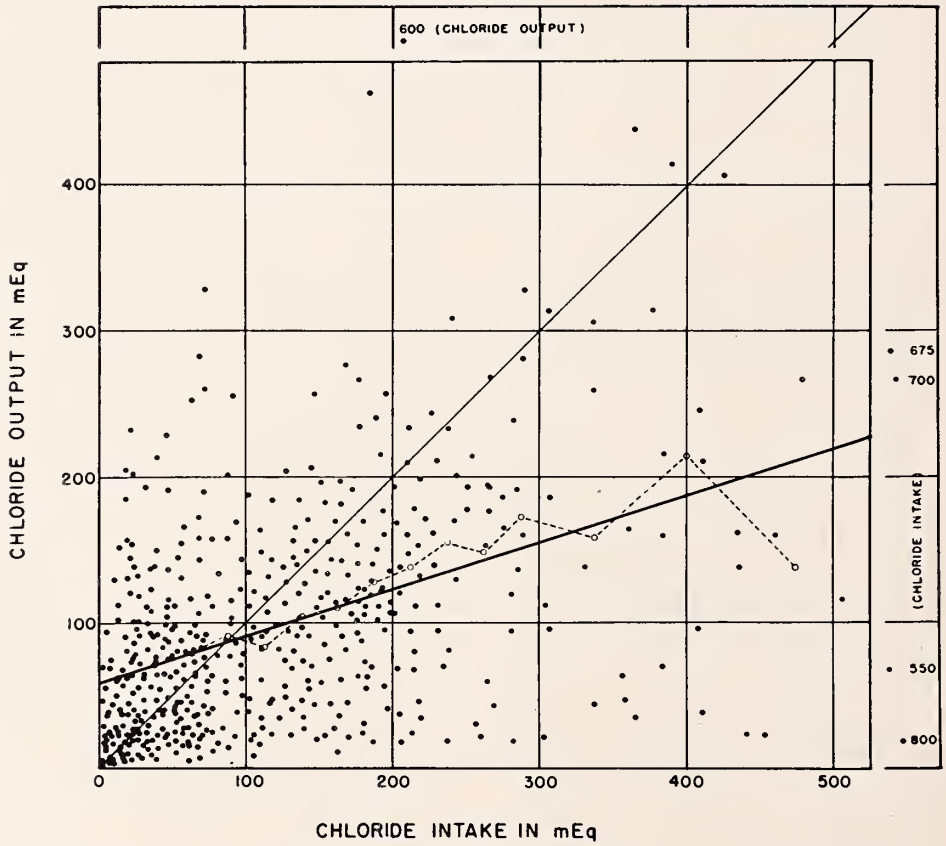


Fig. 5. Chloride Requirements.[4]

equivalence for nitrogen as the patients passed through time. (Fig. 7) In other words, the patients were in better nitrogen balance after the third day of parenteral feeding than they were on the first day.

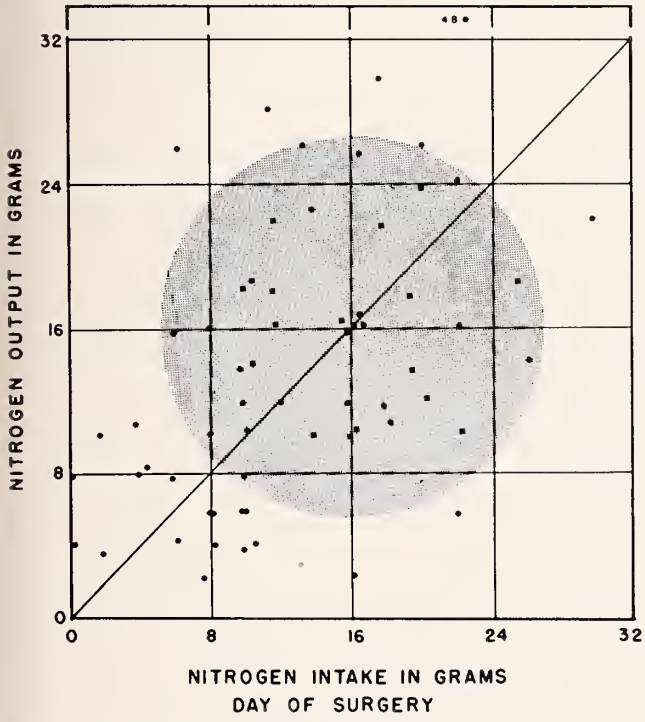


Fig. 6. This represents the scatter of nitrogen intake in relation to nitrogen output on the day of surgery. This is a circular scatter distribution and indicates that on this day there was little or no relationship between input and output. This is the day of "alarm" and, as might be expected, the nitrogen demands were unpredictable.[5]

On the day of surgery, equilibrium was again completely upset. (Fig. 6) On this day there was no relationship between intake-output. The extent of the nitrogen balance on this day seemed unpredictable. This, no doubt, represents the physiologic variables associated with the alarm of surgery.

Beginning again on the first postoperative day, nitrogen input-output relationship has a tendency to become progressively more stable as we pass through time.

Pertaining to potassium, it appeared that equivalence had a tendency to develop as the patient passed through time. On the day of surgery there was a tendency towards a negative potassium balance. Excessive potassium was being excreted. More potassium might have been used. This finding suggests that if the urine output is established, following operation, there need be no fear of administering reasonable amounts of potassium on the day of surgery.

Following surgery, there was no significant increase in the potassium output as might have been anticipated.

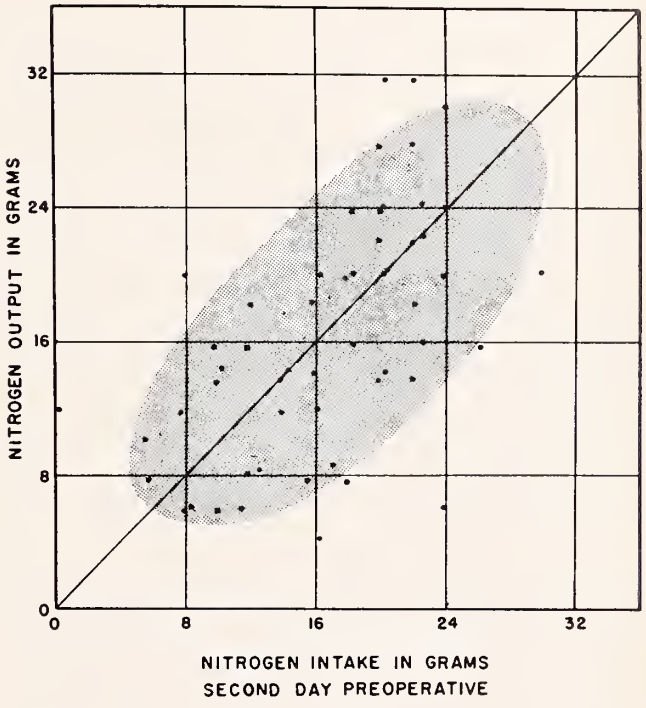


Fig. 7. This represents the nitrogen intake-output relationship on the second pre-operative day. This is an elliptic scatter and indicates a high relationship. It indicates that the patients were attaining nitrogen equilibrium.[5]

For sodium and chloride, one gains the impression (from the wide dispersion of input-output relationship) that sodium and chloride equilibrium is not greatly dependent upon the day-to-day intake. There was no significant trend toward greater sodium or chloride equivalence in passing through time. To that exent we are justified in relying upon the cybernetic influences within the body to make the physiologic adjustments if we will only provide the daily average requirement.

For chloride, as was previously indicated (Fig. 5), it again appears that the amount of chloride intake could have been slightly reduced without causing a chloride deficit, since it was observed that the proportion of patients who were in positive balance increased for each succeeding day as the observations passed through time.

The Ideal Electrolyte Solution.—On the basis of these data we have postulated three theoretical-

ly ideal polyionic solutions for intravenous use, as indicated in the accompanying table.

Though these figures represent the average electrolyte needs during the three phases of surgery, a more practical approach suggests a single basic solution containing the minimum requirements

THEORETICALLY IDEAL POLYIONIC SOLUTIONS FOR INTRAVENOUS USE

Total Fluid Intake/24 Hours		N gm./l.	K mEq./l.	Na mEq./l.	Cl mEq./l.
Pre-operative	2.5 liters	5.6	16.7	42.0	31.7
Day of surgery	3 liters	5.2	25.8*	33.3	30.9
Postoperative	3 liters	7.2	19.6	22.2	22.8

*It may be desirable to leave potassium out on the day of surgery until urine flow is established.

in any of the surgical phases (17 mEq./l. of potassium, 22 mEq./l. of sodium and 20 mEq./l. of chloride).

This then lies within the realm of safety. A basic polyionic solution such as this would provide the daily electrolyte requirements in 2.75 liters of fluid. If the patient is consuming, orally, part of his nutritional requirements, it can be assumed that he is also receiving the proportionate part of his electrolyte requirements and, therefore, a supplementary intravenous feeding with these basic electrolytes will still maintain his daily electrolyte needs.

Electrolyte needs which might become evident during the course of surgery or illness could be corrected by adding concentrates to the basic solution.

Elevated Blood Sugar With Electrolyte Imbalance.—If an electrolyte imbalance does develop, we have found an almost constantly associated elevation of the blood sugar. In a group of fifty-nine patients with definite electrolyte imbalance, the blood sugar was found to lie above 140 mg. per 100 cc. in thirty-seven instances. This finding has suggested the possibility of treating an electrolyte imbalance by the administration of a relatively large quantity of insulin in conjuction with a high concentration of sugar and a basic polyionic mixture of electrolytes. We have used this method of controlling a severe electrolyte imbalance and have obtained excellent results. It is our impression that the forced metabolism of carbohydrate by this method carries with it the metabolism of electrolytes and therein—correction.

An uncontrolled electrolyte imbalance terminates as a renal shutdown, a lower nephron nephrosis, and autopsy reveals tubular degeneration of the kidneys.

Conclusions

Our studies indicate that the average daily parenteral nutritional requirements to be 2.75 liters of fluid, 12 to 24 grams of nitrogen, 90 mEq. of sodium and chloride and 70 mEq. of potassium.

From these studies it appears that a polyionic electrolyte solution containing 17 mEq./liter of potassium, 22 mEq./liter of sodium and 20 mEq./liter of chloride should be employed as a basic solution for routine parenteral use. Specific electrolyte deficits can be corrected by adding ampules of electrolyte concentrates to the basic solution.

When a critical electrolyte imbalance develops, it is frequently associated with an elevation of the blood sugar.

Under these circumstances we have found that an electrolyte imbalance responds to treatment by the intravenous administration of high concentrates of sugar and large doses of insulin in a basic polyionic mixture of electrolytes.

When a patient dies with an electrolyte imbalance, postmortem examination indicates tubular degeneration of the kidneys.

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The Treatment of Hypospadias

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HYPOSPADIAS is a congenital arrest of fusion of the urethral folds behind the fossa navicularis. It is classified according to the location of the external urinary meatus, as juxtaglandular (Fig. 1a), penile (Fig. 1b), penoscrotal (Fig. 1c), scrotal (Fig. 1d), and perineal (Fig. 1e).

Its etiology is not clear, but appears to be due to some disturbance in hormonal relationships during early development; it can be produced in experimental animals by administering estrogens to the pregnant female, with only the male offspring being affected. In this connection, it has been suggested that younger women, because of their greater supplies of estrogens, are more likely to bear hypospadiac children. Sorenson investigated the ages of the mothers of 167 hypospadiacs and concluded that this was not so.

The only other congenital anomaly commonly associated with hypospadias is undescended testis, which is about ten times more common in association with it than without it. Hypospadias has some tendency to occur in families, in one instance having been reported in six successive generations, but such an occurrence is rare.

What appears to be perineal hypospadias with undescended testes in an infant constitutes a special problem, because such an individual may actually be a female pseudohermaphrodite with hyperplasia of the androgenic layer of the adrenal cortex and hypoplasia of the zones which produce the mineralocorticoids. It is imperative that these patients be recognized before operation is considered because any unusual stress may precipitate a fatal addisonian crisis (Wilkins). Their sexual chromatin is female, they have excessive 17-ketosteroids in the urine, and they respond to treatment with cortisone.

Hypospadias requires operation only if it interferes with aiming of the urinary stream or with proper insertion of the penis into the vagina. This excludes the juxtaglandular variety which, however, is occasionally associated with stricture of the external urinary meatus requiring meatotomy. Since the conventional operation will displace the urinary opening backward, and will fail to redirect the stream, the condition is best treated by Browne's dorsal meatotomy (Fig. 2). There is usually a duct which extends backward from the fossa navicularis to end blindly just dorsal to the meatus. A single cut with one blade of a scissors inserted into this duct and the other into the meatus will widen it without displacing it backward (Fig. 3).

In the more extensive types of the anomaly, comprising half or more of the total number, the objectives of operation are to straighten the penis and to advance the external meatus. This ordinarily has to be done in stages because the former requires so much mobilization of the skin in the area of the future urethra as to make its construction impracticable until healing has resulted in a new blood supply.

Some difference of opinion exists as to the best age for operation. It is undoubtedly easier to perform after development is complete, because there is more tissue with which to work, but there is a growing feeling that it is better psychologically to finish treatment by the age of six, so that the hypospadiac will not be twitted by his schoolmates. I have recently had an interesting insight into this question from a conversation with a patient, now a psychiatrist, upon whom I had operated at the age of eighteen for penoscrotal hypospadias. He said that his brothers never teased him about his deformity, but that he had avoided athletics, in which he was much interested, because he was ashamed to expose himself in locker rooms. He had concluded that his childhood and adolescence would have been much more satisfactory if his anomaly had been corrected in the preschool period.

Successful straightening of the penis depends primarily, not upon the manner in which the skin is

Presented before the Montana State Medical Society, Missoula, September, 1957.

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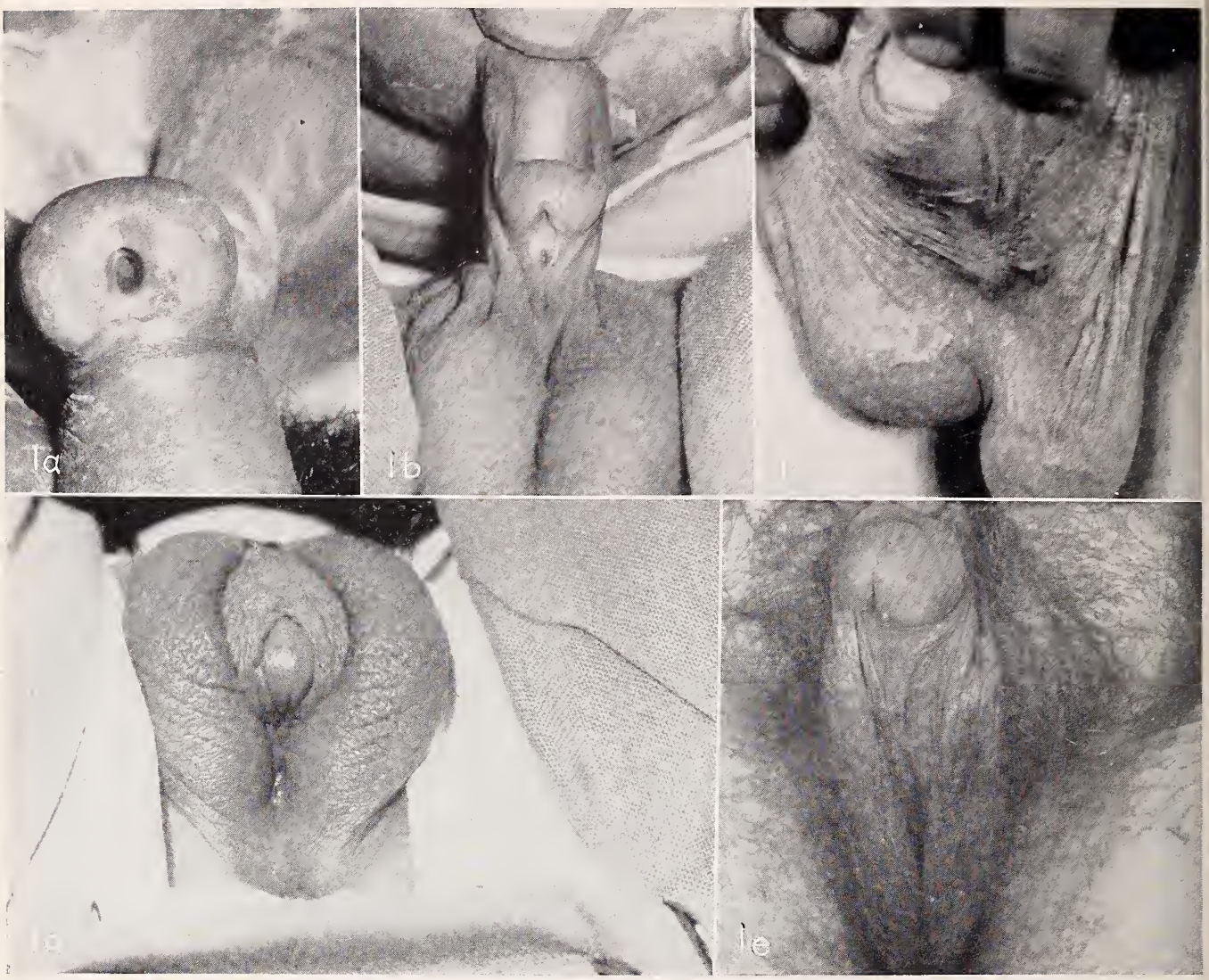


Fig. 1. Various types of hypospadias: (a) juxtaglandular, (b) penile, (c) penoscrotal, (d) scrotal, (e) perineal.

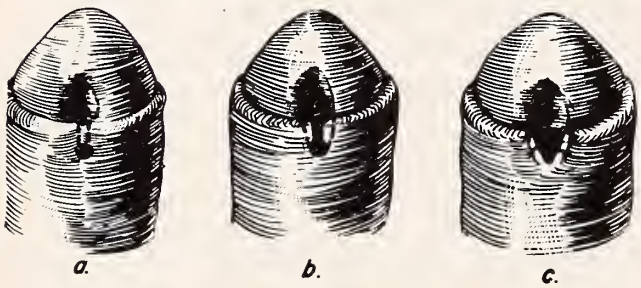


Fig. 2. Denis Browne's dorsal meatotomy.

moved about, but rather upon complete removal of the fibrous rudiment of the corpus spongiosum which, being shorter than the corpora cavernosa, serves as a bowstring and so produces the ventral curvature of the penis (congenital chordee) which is characteristic of hypospadias. Secondary shortening of Buck's fascia and attachment of the free end of the intact urethra may contribute to the curvature. Only two methods of straightening the penis need be considered. The first workable technique, and still a useful one, was that of Duplay (Fig. 4). The fibrous band is dissected out through a transverse incision on the ventrum just behind the glands. The ventral half of Buck's fascia is divided or excised if necessary, and the distal urethra is then freed if the penis is not perfectly straight. The redundant skin on the dorsum is mobilized so that longitudinal closure of the skin will draw the excess toward the ventrum. The urine is diverted for a few days with an inlying catheter. Because any operation upon the penis is likely to be followed by so much swelling of the skin as to pull suture lines apart, a snug wrapping of vaseline gauze covered with sterile roller bandage is applied. It is probably a good plan to give an estrogen in doses sufficient to prevent erection, starting a few days before operation, and continuing until healing is well advanced.

Nesbit (Fig. 5), believing that a longitudinal scar upon the roof of the new urethra might interfere with healing of the urethroplasty, prefers to make a circular incision just behind the corona and peel the whole foreskin back to the external meatus. He removes the rudimentary corpus spongiosum, then pulls the skin back down like a coatsleeve and incises it transversely upon the dorsum sufficiently to permit drawing the glans through it and suturing the two together. The defect thus left upon the ventrum is closed transversely. This transfers the excess dorsal skin to the ventrum where it is later used for construction of the urethra. The resulting transverse scar cannot reproduce the original curvature, nor does it improverish the blood supply of a new urethra later built from ventral skin. The choice between these two operations is, in my opinion, as much a matter of personal taste as of any superiority of one over the other. Far more important are thorough correction of any factors contributing to curvature, and painstaking hemostasis.



Fig. 3. Shows results using Browne's meatotomy.

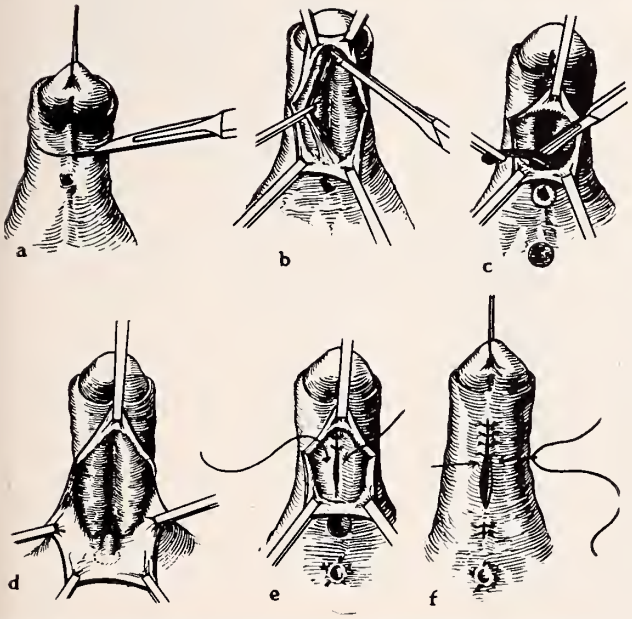


Fig. 4. Duplay technique for straightening of the penis.

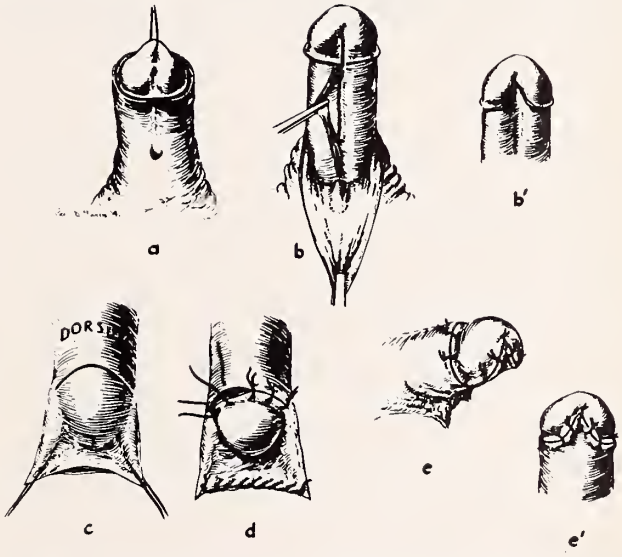


Fig. 5. Modification of Nesbit's correction of hypospadias.

Whether the new external meatus should be at



Fig. 6. Shows results of Thiersch urethroplasty with meatus behind glans (after sixteen years).

the tip of the glans, as in the normal organ, or whether it suffices to place it at the corona, is a matter of disagreement. In my experience and in that of Culp, tunnelling the glans almost invariably leads to stricture requiring tedious treatment. I therefore prefer, at the first stage, to make a groove in the ventral aspect of the glans from the fossa navicularis through the corona as shown in connection with Nesbit's operation. When, at the next stage, the urethra is brought to the corona, the patient will be able to urinate straight forward, and will not be subject to so much risk of stricture of the meatus; the penis will look normal to any but the most expert scrutiny (Fig. 6).

Having straightened the penis, one must decide when to construct the urethra. I prefer to wait for at least a year so that contraction of the scar of the first operation will be complete; if curvature is destined to recur, it will have done so. It is much easier to correct before an urethra has been made. However, Belt undertakes urethoplasty in three months.

I shall content myself with discussing but three of the innumerable types of urethroplasty which have been described, since one of them will be applicable to any situation. Certain principles

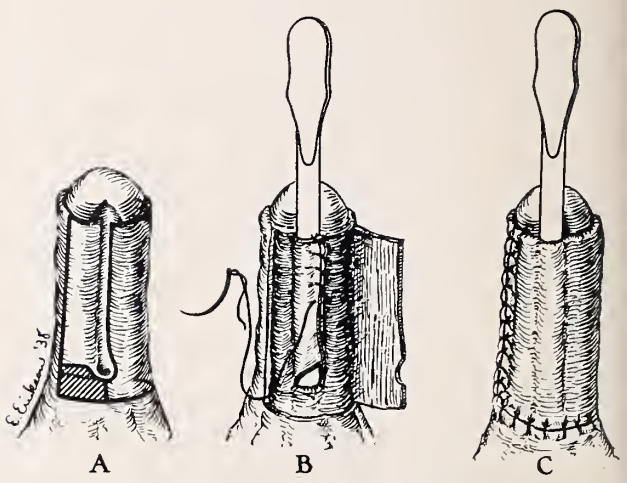


Fig. 7. The operation of Thiersch.

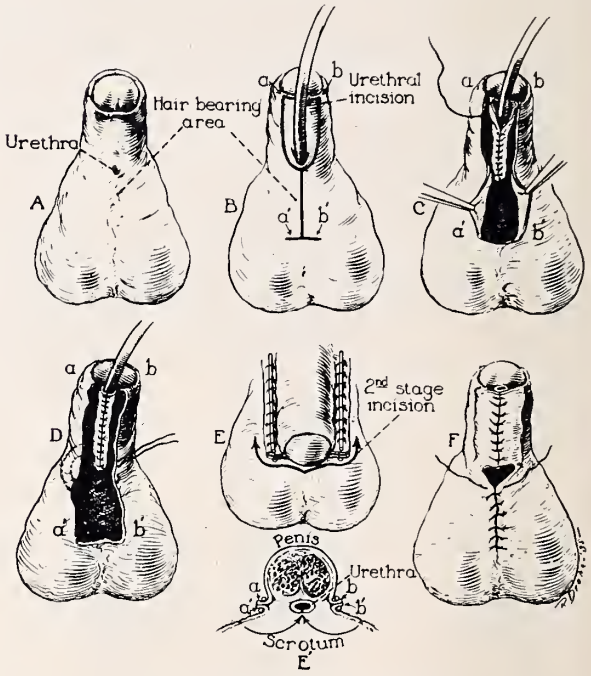


Fig. 8. Cecil's operation.

are essential to success with any urethroplasty. First, the penis must be straight. Second, skin flaps must be as thick as possible. Third, there must be absolutely no tension on suture lines, especially since postoperative swelling will increase it; and last, suture lines in the new urethra should not coincide with those in the outer skin.

The operation of Thiersch (Fig. 7) was the first to succeed. It is suitable only for fairly mature genitalia. It differs from that of Duplay in

that the suture lines in the new urethra do not coincide with those in the covering skin. It may be used for any degree of hypospadias, but is followed by fistulae, particularly at the junction of the old and new urethras, in too high a percentage. For that reason, it is best reserved for scrotal and perineal hypospadias in individuals with fully developed genitalia.

Cecil's operation is most nearly fistula-proof, but is not applicable to posterior scrotal nor perineal defects (Fig. 8). The urethra is constructed in the manner of Thiersch or Duplay, and is then buried in a trough in the scrotum. The lack of postoperative swelling (Fig. 9) is probably as responsible as the re-enforcement of the urethra by the scrotum for the lack of postoperative fistulae. While the necessity for a third stage to separate the penis from the scrotum is a disadvantage, it is psychologically advantageous in that all concerned expect the third operation: it avoids the disappointment of an unanticipated third procedure for a fistula.

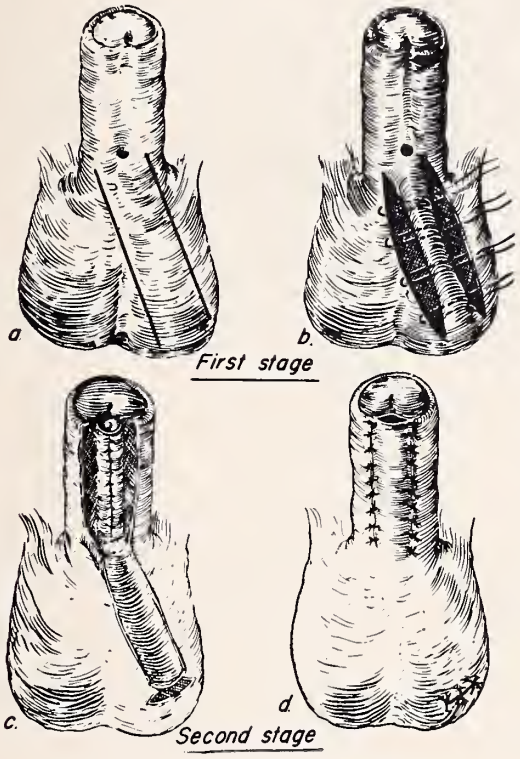


Fig. 10. Wehrbein's operation.

Wehrbein's operation stands midway between the two preceding ones in terms of frequency of fistulae (Fig. 10). It involves two stages, and is applicable with slight modification to somewhat more extensive defects than is the method of Cecil.



Fig. 9. Shows the lack of postoperative swelling using Cecil's operation.

Troublesome complications may follow any of the operations for hypospadias. They include recurrent curvature of the penis, fistulae, strictures especially of the external urinary meatus, and urethral beards with secondary stone formation. The first three result from technical faults either in the design or in the execution of the operation. These include: inadequate removal of the fibrous rudiment of the corpus spongiosum, imperfect hemostasis with secondary hematoma, the use of flaps which are too thin, and suturing under tension. Postoperative swelling may produce tension where none was present at the time of closure. All are avoidable with sufficient care.

The fourth complication (Fig. 11) results from the use of hair-bearing skin for the urethra, and may occur after any of the operations described. In mature individuals this can be avoided by epilating surgically the skin to be used for the urethra, preferably at the time of straightening. This requires that pre-operative shaving of the

area be omitted. Each hair in the area of the future urethra is elevated with a hemostat and its follicle cut off with fine scissors. In infants and children it is impossible to be sure just where hair may appear. Therefore, the use of potentially hair-bearing skin can be avoided only by using a hairless free graft of skin (McIndoe) or of vesical mucosa (Marshall). Unfortunately, free grafts may fail to grow with the penis and so cause recurrent curvature. Luckily, the removal of urethral stones is simple, and many patients with urethral beards do not develop them.

In sixty-four of my patients, the penis was straightened more than a year ago (Duplay thirty-eight, Nesbit twenty-six) with one recurrence of curvature. Included are two previously operated upon unsuccessfully by others. In addition sixteen have been straightened during the past year; while there have been no recurrences, it is too soon to say that they cannot occur.



Fig. 11. Complication resulting from use of hair-bearing skin for the urethra.

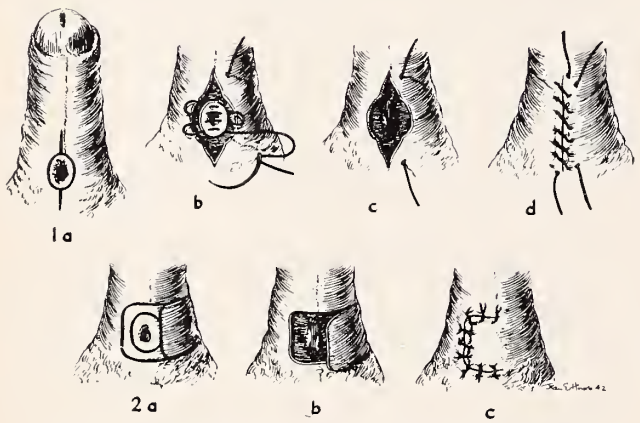


Fig. 12. Methods of closure of urethral fistula.

Sixty patients have been subjected to urethroplasty. Forty-three were done by the method of Thiersch: twenty-two healed by first intention, and three were left with fistulae which closed spontaneously, so that the urethroplasty was completed in one session in about 60 per cent. Fourteen of the remaining fistulae have been closed (Fig. 12), ten in one trial and four in two; one recurred after closure, and there has been no opportunity to close the other four. Cecil's operation has been done nine times; no fistulae resulted. One Wehrbein operation left a fistulae which, however, closed spontaeously. Four of six Denis Browne operations resulted in fistulae; the other two broke down almost entirely. While all have been repaired, I have abandoned the method as unsuitable to my talents or lack thereof.

Two strictures of the old external meatus have followed straightening of the penis, and one developed at the junction of the new and old urethras following urethroplasty. Five meatal strictures followed urethroplasty, but four of these resulted from bringing the new urethra through the glans.

(Continued on Page 573)

Saddle Embolus of the Aorta

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THE OCCURRENCE of a saddle embolus of the aorta is one of the most catastrophic events observed in medical practice and without surgical intervention carries an immediate mortality rate of at least 75 per cent.[1] It is high because gangrene of the legs or cardiac disease may cause death if the patient does not succumb from the embolus.

The chance for immediate survival is good if a satisfactory embolectomy is carried out within a few hours after the occlusion. Unfortunately, death from further embolic episodes and heart failure occurs frequently so that there is general pessimism regarding this vascular lesion.

In 1950, Albright and Leonard surveyed all reported cases of aortic embolus in the world's literature.[2] They recorded 193 patients; of these, 144 died, nineteen survived with loss of limb, and twenty-six were successfully treated by embolectomy. Since that report, the proportion of reported success is considerably higher, although the total of successful aortic embolectomies by 1957 was still only about fifty. A successful operation has arbitrarily been described as a complete restoration of circulation to both legs for a period of at least three weeks after operation with no loss of tissue as a result of the disturbed circulation.[2] One reason for more successful cases of aortic embolectomy of late is because of the increasing frequency of surgical procedures for acquired valvular heart disease. These cases occur in hospitalized patients and therefore it is possible to extirpate the clot earlier. A successfully treated case of saddle embolus of the aorta is reported here.

Case Report

The patient was a housewife, aged forty-two, with rheumatic heart disease. She had mitral and aortic valvular disease with mitral insufficiency and auricular fibrillation. She was being treated with digitalis.

On June 10, 1956, the patient had left ureteral colic and hematuria which probably was caused by a renal arterial embolus.

On July 15, 1956, she developed a sudden right hemiparesis and aphasia which undoubtedly was due to a cerebral embolus.

She was hospitalized and four days later, on July 19, 1956, at 7:00 p.m. the patient experienced severe pain in both legs. Her entire body was cool and clammy, but the legs were cooler and there was mild cyanosis. Pulsations were absent bilaterally in the femoral, popliteal, posterior tibial, and dorsalis pedis arteries.

A diagnosis of saddle embolus of the aorta was made and the operation begun two and one-half hours after the occlusion. Spinal anesthesia with small amounts of general anesthesia was used and the abdomen opened through a midline incision centered at the umbilicus. The small bowel was placed outside of the abdominal cavity.

The posterior peritoneum was incised over the aorta and down over the sacrum to expose the common iliac arteries. The aorta up to 5 cm. above the bifurcation was pulseless and firm; the common iliac arteries were firm for about 3 cm. below the bifurcation and distal to this they were contracted in spasm. Umbilical tapes were placed around the common iliac arteries below the embolus and a Satinsky clamp on the aorta above the embolus. Care was taken not to injure the lumbar vessels. A longitudinal incision about 3 cm. long was made in the anterior aorta just above the bifurcation and directly over the embolus. The large clot was extracted and suction applied to the common iliac arteries to remove smaller thrombi. There was some back bleeding in the iliac arteries. The aortic incision was then closed with a continuous over-and-over suture of 5 "0" arterial silk on an atraumatic needle. No attempt was made to evert the edges. The umbilical tapes on the iliac arteries were released first and then the aortic clamp removed. Satisfactory pulsations were palpated in both external iliac arteries. The legs became warm and pink and pulsations returned to the lower extremity arteries.

The peritoneum was approximated over the aorta and the abdomen closed in the usual fashion.

During the operation the blood pressure dropped from 150/90 to 60/40, but then gradually returned to 115/60.

No organisms were cultured from this aortic embolus.

Intravenous heparin was started twenty-four hours postoperatively in a dosage of 50 mg. every four hours. Dicumarol was begun sixty hours postoperatively and heparin discontinued when a satisfactory prothrombin time was obtained.

Presented before the Minnesota Surgical Society, Duluth, Minnesota, July 19, 1957.

TABLE I. SADDLE EMBOLUS OF AORTA IN DULUTH
(1947-1957)

Summary of cases

No.	Age	Sex	Etiol.	Prev. Emboli	Cardiac Rhythm	Onset	Hr. to Surgery	Treatment	Result
1.	45	F	R.H.D.	Yes	A.F.	Pain in legs	—	Amputation	Died, heart failure, and mesenteric emboli
2.*	42	F	R.H.D.	Yes	A.F.	Numb, pain in legs	2½	Aortic embolectomy	Alive 18 months
3.	42	F	R.H.D.	No	A.F.	Pain legs	—	Anticoagulants	Alive
4.	75	F	A.S.	No	A.F.	Numb legs	5	Symp. block, iliac and femoral embolectomy	Died, acute coronary insufficiency
5.	74	M	A.S.	No	A.F.	Pain in legs	—	Anticoagulants	Died, bilateral pulmonary emboli
6.	87	F	A.S.	Yes	A.F.	Blue cold legs	—		Died, cerebral embolism
7.	63	F	A.S.	No	A.F.	Pain in legs	—	Symp. block, amputation	Alive—1½ yr.
8.	71	M	A.S.	No	A.F.	Blue cold legs	—	None	Died

*Case report.
R.H.D.—Rheumatic heart disease.
A.S.—Arteriosclerotic heart disease.
A.F.—Auricular fibrillation.

TABLE II. ORDER OF FREQUENCY OF PERIPHERAL ARTERIAL EMBOLI

Warren, Linton and Scannell[4] (337 Emboli)

Site	Emboli	Per Cent
Femoral	80	23.7
Upper extremity	59	17.5
Internal carotid	50	14.6
Popliteal	33	9.8
Iliac	30	9.0
Aorta	30	9.0
Mesenteric	17	5.0
Tibial	8	2.4
Other	30	9.0
Total	337	100.0

Other postoperative measures consisted of intranasal oxygen, elevating the head of the bed on 6-inch shock blocks, and a heat cradle with one 40 watt bulb. The cardiac condition was managed by Dr. Robert Goldish, an internist.

Several hematomas developed in both buttocks at the sites of penicillin injections, but otherwise the patient did well postoperatively.

Physiotherapy for the hemiparesis was started eleven days postoperatively. The patient improved rapidly except for weakness in the right arm. About one month after surgery she was dismissed from the hospital. Pulsations of the femoral, popliteal, posterior tibial, and dorsalis pedis arteries were all obtainable at the time of discharge. The patient is living and in fair health, now, eighteen months since the aortic embolectomy.

This patient's heart disease was primarily a mitral regurgitation so that heart surgery was not considered. Instead, she has been on Dicumarol and has had no further embolic episodes.

During the past ten years there have been eight cases of saddle embolus of the aorta in Duluth. Pertinent features are tabulated in Table I.

Three cases were on the basis of rheumatic heart disease and five had arteriosclerosis as the etiologic factor. Auricular fibrillation was present in all patients and the initial symptom of leg pain was common. Five patients died, one survived after bilateral leg amputation, one recovered, but has claudication, and only one was successfully treated by embolectomy. It is difficult to be certain that the medically treated case was a true saddle embolus of the aorta. This patient *(Case 3)* did not enter our hospital until three weeks after occlusion. Circulation by this time was adequate to maintain life in both lower limbs so that only anticoagulants were used in management.

Incidence

Emboli to the aortic bifurcation constitute about 5 to 10 per cent of all peripheral arterial emboli.[1,3,4]

The following table of Warren et al[4] indicates the order of frequency of peripheral arterial emboli (Table II).

Pathogenesis and Etiology

Auricular fibrillation is the commonest cause of aortic embolism and the auricular appendage is the chief site of thrombus formation.

Rheumatic heart disease with mitral stenosis is most commonly the etiologic factor, but arteriosclerotic heart disease and hyperthyroidism may be the basis for the fibrillation. During a mitral commissurotomy operation an intra-auricular thrombus may break loose and lodge at the aortic bifurcation. Several of these cases have been reported so that peripheral pulsations are carefully watched following this operation.[5-7]

Myocardial infarction with associated thrombus formation on the wall of the ventricle is a relatively frequent cause of aortic embolism.

Unusual causes of an aortic embolus are para-

doxical emboli and large thrombi formed at the site of an arteriosclerotic plaque or aortic aneurysm.

Paradoxical emboli are those which arise from the peripheral venous system and reach the arterial side only if there is a defect in the partition between the right and left heart chambers.

Vegetations from the mitral valve in the course of subacute bacterial endocarditis are not large enough to occlude the aortic bifurcation.

Pathologic Physiology

Changes begin to take place in the artery at the site of the embolus soon after the lodgement of the clot.

Spasm of the adjacent arterial tree may be severe and may of itself cause gangrene of the leg. Leriche and Fontaine[8] demonstrated that the spasm originates as a nervous reflex in the damaged arterial wall spreading via the sympathetics to produce spasm not only of the main channels, but of the collaterals as well. Sympathetic block or sympathectomy may relieve this spasm. However, I believe that sympathetic block plays a minor role in the management of aortic embolus. If the clot is removed, the reflex arc for spasm is broken. Stated another way, if the "plumbing job" is well done, sympathetic interruption is not necessary.

An embolus may first lodge at the aortic bifurcation and later migrate down one or both iliac arteries or a segment of the embolus may break off and move distally in the arterial tree.

The primary reason for early operation is the danger of secondary thrombus formation distal to the embolus. The speed with which a secondary thrombus forms is variable. A distal thrombus may form in a matter of several hours to an extent at which the smaller arterial radicals are completely obliterated. This of course, condemns to failure any attempted removal of the embolus. On the other hand, there may be practically no secondary thrombosis in as long as twenty-four to thirty hours after occlusion.

Gangrene of both lower extremities is common if a saddle embolus is not removed. Those cases treated conservatively and in which gangrene did not occur either had fragmentation and distal migration of the embolus, or, previous gradual thrombosis of the iliac artery stimulated collateral circulation, or, there may not have been a bifurcation embolus, but rather a severe vasospasm associated with unilateral iliac embolism.

Symptoms and Signs

From a teaching standpoint, it is convenient to think of the five P's of embolism, namely: pain, pallor, paresthesias, paralysis, and pulseless. However, this quintet is not always present in its entirety.

The acute picture is striking and unforgettable. At the onset, there is often formication in the perineum and paresthesias in the legs, and they soon become paralyzed. There is nearly always pain in the lower extremities.

The feet are waxy white and cadaveric, and quickly become cool. The upper legs and the body to or above the level of the umbilicus displays a mottled cyanosis from venous stasis. No pulse can be felt in either femoral, popliteal, posterior tibial or dorsalis pedis artery.

With these findings and a background of a cardiac lesion capable of producing a large detachable thrombus, the diagnosis is obvious.

Differential Diagnosis

Thrombosis of the aorta with its gradual onset accompanied by claudication, trophic changes, leg atrophy, and impotence can scarcely be confused. Some of the peripheral manifestations of a dissecting aneurysm of the aorta may suggest embolic occlusion, but the mode of onset, the changing symptoms as the dissection progresses, and the late disturbance of pulse in either leg should be the basis of differentiation. A ruptured aneurysm of the abdominal aorta may interfere with pulsations in the leg. However, the associated collapse is more than is seen with uncomplicated embolic occlusion.

Management

A saddle embolus of the aorta may be treated surgically or medically. There are four don'ts that apply to the management of any arterial embolus whether the treatment is operative or non-operative, and these apply to an aortic embolus. Don't heat, don't refrigerate, don't elevate, done delay.

It should be made clear that every case of aortic embolus is treated surgically unless a major contraindication exists. Shein[9] in a recent article has listed the following contraindications to aortic embolectomy: a moribund patient, nonsalvable

limbs, occlusion of more than nine hours duration, and co-existence of cerebral or mesenteric emboli resulting in a pre-morbid condition.

Taylor in 1952 reviewed all successful aortic embolectomies and found only two that were done after six hours.[1] However, successes have been reported as long as twenty-four hours following occlusion, so I would not deny a patient the only opportunity of recovery if other factors were favorable.

Because the operation can, at best, result only in limb salvage without influencing the etiology, there are certain patients who are best managed by non-operative methods. These methods would include: paravertebral sympathetic block, anticoagulants, protective bandaging of limbs, reflex hyperemia, and vasodilator drugs.

However, the vast majority of patients who have to be treated conservatively will not survive.

The key to effective therapy is prompt and accurate diagnosis. Once the diagnosis is made, plans should be made to institute surgery as promptly as possible. The operative procedure aims at restoring the aortic pathway. The cardiac danger in the patient with mitral stenosis is another problem.

Surgical treatment consists of either direct aortic embolectomy or of indirect removal of the embolus through iliac or femoral arteriotomies. The latter method has certain disadvantages, namely, it is not always possible to remove all embolic material in this manner, and, the intima may be damaged by much probing. A retroperitoneal approach to the iliac arteries and aorta may be used, but the method of choice is certainly direct aortotomy via a transperitoneal incision. This gives a much greater chance for success than distal exposure with attempt to extract the clot from a distance.

The surgical treatment may be conveniently divided into three periods of time: (1) treatment of the embolus, (2) immediate postoperative management and (3) long term management.

Treatment of the Embolus.—Following prompt and accurate diagnosis, the patient should be hospitalized and the pain controlled with adequate amounts of narcotic, cardiac compensation maintained (if possible), and early embolectomy performed, perferably within eight hours.

Spinal anesthesia is probably the most satisfactory anesthetic.

The management as described in the Case Report, I believe is entirely adequate. Pott's arterial clamps are probably superior to umbilical tapes in controlling the arteries below the embolus, but rubber catheters or umbilical tapes may be used, and Madden recommends digital compression of the aorta and iliac arteries.[10]

Immediate Postoperative Management.—Mild warmth and slight elevation of the head of the bed I believe are beneficial. Anticoagulants if used carefully are of real aid. They are of as great a value in preventing intra-auricular thrombus formation as they are in preventing thrombosis in the aorta and distal arteries. I would not abandon their use as some have done.[10]

If it appears that the embolus was removed satisfactorily I do not believe that intra-aortic heparin is necessary. However, if the opposite is true and there is danger of clot farther down the leg, perhaps intra-aortic heparin at the conclusion of the operation is of benefit. It may be necessary to explore the femoral arteries or consider retrograde flushing of the more distal arteries if pulsations do not return in the extremity.

Long-term Management.—With the patient fully recovered from the effect of the aortic embolus, one should undertake studies from the viewpoint of correcting the cardiac lesion which was responsible for the embolus. In those cases with mitral stenosis, perhaps mitral commissurotomy should be carefully considered. Auricular appendectomy is not done as frequently now as several years ago. In this way, not only is cardiac function improved, but the risk of further embolic episode is lessened.

Long term anticoagulant therapy is an alternate method of treatment which is entirely satisfactory for rheumatic heart disease patients as well as those patients whose embolus arose from a mural thrombus secondary to myocardial infarction.

Prognosis

The factors influencing prognosis are: general condition of the patient and age, associated heart disease, associated ateriosclerosis, time interval until surgery, distal thrombosis, and incomplete evacuation of clot.

Summary

1. A successfully treated case of aortic embolus has been reported.

2. The embolus was removed surgically and there was complete restoration of arterial pulsations and function of the lower extremities. The patient is alive and well, now, eighteen months later.

3. There have been eight cases of saddle embolus of the aorta in Duluth hospitals during the past ten years.

4. Five patients died, one was treated medically and survived, but had claudication, another patient survived but had bilateral leg amputation. Only one was treated successfully by embolectomy.

5. A method of management of aortic embolus was described.

6. Factors influencing prognosis were listed.

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THE TREATMENT OF HYPOSPADIAS

(Continued from Page 568)

Summary and Conclusions

Hypospadias presents a fascinating surgical problem, the solution of which demands a variety of techniques. Experience with 140 operations in eighty patients has been summarized briefly.

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The Food and Drug Administration and Drug Safety

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IN choosing this topic for discussion, I have attempted to follow the views of Dr. R. B. Goldschmidt expressed in a presidential address at the Ninth International Congress of Genetics, held in Florence in 1954. He said:

"This means a topic which is not so special as to interest only a small group, but which nevertheless is on a sufficiently technical level; one which is general but not so general as to become commonplace; one which is to a certain extent controversial, at least sufficiently so to make an interesting discussion, yet at the same time is not so controversial as to be unsuitable for a discussion without the use of the gentle art of making enemies; one which is based upon the performance of the past without being of yesterday and retrospective, but also one which dares to look into the future and to risk a jump beyond the present without soaring into a flight of pure imagination."

In the golden age of medical discovery in which we live, complex technological problems of the highest order have developed. For this and other reasons, the Congress of the United States enacted food and drug legislation, the original "Pure Food and Drug Law" of 1906, which was completely rewritten and modernized in 1938. It is the 1938 statute known as the Federal Food, Drug, and Cosmetic Act and its regulations which establish the legal standards of performance and conduct for drugs sold and shipped in interstate commerce and for the manufacturing drug industry in general. It is this law which is administered by the United States Food and Drug Administration.

Long before the physician orders a drug, a team of physicians, chemists, bacteriologists, and pharmacologists have examined the claims of the manufacturer of the drug, studied the reports of investigations, often performed tests themselves, and established and will enforce the standards to which the manufacturer must conform to assure the safety of the drug. The scope of this work extends from new to old drugs, from ethical drugs to quack products, from anthelmintics to antibiotics, from labels to literature, and from records to research. The team is the Food and Drug Administration.

Modern scientific methods are required by the team to carry out the purpose of Congress to insure that foods, drugs, therapeutic devices, and cosmetics are pure, wholesome, safe to use, made under sanitary conditions, and truthfully labeled. The Administration maintains laboratories in Washington known collectively as the Bureau of Biological and Physical Sciences which is composed of seven divisions each with special fields of interest.

In discussing the safety of drugs, it will bring the problem into proper focus if we realize at the start that no drug is safe in the absolute sense. It is only that diseases are not safe either and, in most cases, the drug is the lesser of the two evils.

The statement that no drug is safe is not an exaggeration for effect. Consider such everyday remedies as aspirin and mineral oil. The chances for injury are slight when 10 grains of aspirin are taken for a simple headache. The danger with aspirin is when its use masks a more serious disease, or is taken by the rare individual with an idiosyncrasy, or an infant has ingested an overdose from a carelessly misplaced bottle of aspirin. The solubilizing effect of mineral oil on the oil-soluble vitamins and subsequent loss via the intestinal tract is too well known to warrant further comment.

If the premise is accepted that no drug is intrinsically safe, the problem resolves itself into deciding the conditions under which the drug may be used safely. When they are considered from this standpoint, drugs are found to fall into three categories:

1. Those drugs whose chances of adverse effect may be sufficiently remote that the decision of whether or not to use them can be left up to the

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patient aided by the advice that can be given him on the label. These are the self-medication or over-the-counter drugs.

2. Those drugs whose sale is limited to prescription by a physician or dentist. This is not a conspiracy, as many seem to think, to enable the pharmacist to charge more and give the physician an additional fee for a prescription renewal, but rather that there are enough possibilities for harm in the drug that its use cannot be entrusted to the layman.

3. Finally, those drugs whose nature is such that even the physician is believed to need a certain amount of supervision in their use. These comprise the so-called narcotics: opium, cocaine, marihuana, and some of the newer synthetic drugs which possess addicting liability.

How are drugs assigned to these three groups? Prior to 1938 the decision rested with the manufacturer. When over 100 patients died as a result of a poor decision in the use of diethylene glycol as a solvent for sulfanilamide, the Congress enacted the new Federal Food, Drug, and Cosmetic Act, which included "New Drug Provisions." The term "new drug" was, by this law, given a legal definition. A new drug is defined as one that is not generally recognized among experts, qualified by scientific training and experience to evaluate the safety of drugs, as safe for use under the conditions prescribed, recommended, or suggested in the labeling. According to this definition it is the lack of recognition of safety by experts that constitutes newness. Very important also is the concept that safety is considered from the standpoint of the proposed labeling or recommendations for use. Without labeling, an opinion on new drug status is essentially meaningless.

Newness of a drug may arise by reason of:

1. The newness for drug use of any substance which composes the drug, in whole or in part, whether it be an active substance or a menstruum, excipient, carrier, coating or other component.

2. The newness for drug use of a combination of two or more substances, none of which is a new drug.

3. The newness for drug use of the proportion of a substance in a combination, even though a combination containing the substance in other proportion is not a new drug.

4. The newness of use of a drug in diagnosing, curing, mitigating, treating, or preventing a disease, or to affect a structure or function of the body, even though the drug is not a new drug when used in another disease or to affect another structure or function of the body.

5. The newness of a dosage, or method or duration of administration or application, or other condition of use prescribed, recommended, or suggested in the labeling of a drug, even though the drug, when used in other dosage, or other method or duration of administration or application, or different condition, is not a new drug.

The new-drug section of the law requires pretesting of preparations prior to marketing. The manufacturer is required to submit for review the following information:

1. Full reports of investigations which have been made to show whether or not the drug is safe for use.

2. A full list of the articles used as components of the drug.

3. A full statement of the composition of the drug.

4. A full description of the methods used in, and facilities and controls for the manufacture, processing, and packing of the drug.

5. Samples of the drug and of the articles used as components thereof as the secretary may require.

6. Specimens of the labeling proposed to be used for the drug.

These data, when assembled and submitted, constitute a new-drug application. Responsibility falls on the Food and Drug Administration to evaluate all applications and determine whether they are complete, whether adequate study has been conducted to evaluate the safety of the preparation, and whether the article can be safely used. If all of the criteria are met satisfactorily, the application is made effective and the manufacturer is at liberty to introduce the drug into interstate commerce. If the application is incomplete or otherwise deficient, the manufacturer is advised and he can undertake steps to correct the situation and again submit the data for review.

The starting point for determining the safety of a new drug is aptly phrased by the late Dr. A. L. Tatum, formerly Professor of Pharmacology of the University of Wisconsin. He said:

> "People are rather unpredictable and don't always die when they are supposed to, and don't always recover when they should. All in all, we must depend heavily on laboratory experimentation for sound and controllable basic principles."

The experimental approach for developing the data may vary somewhat depending on the objectives, but considering this from the aspect of the clinician only, the more important experimental phases that should be undertaken include acute and chronic toxicity, pharmacodynamics, and pathology. Clinical evaluation is next in order and should follow, not precede, the laboratory tests. Some of the criteria that enter into the final evaluation as to which of the three categories a drug may be assigned, include the seriousness of the disease to be treated, character of the toxic effects, and availability and safety of other drugs for the same disease.

What happens when a drug becomes old, obsolete, or dangerous? Drugs are engaged in a constant struggle for survival not very different from one taking place in the world of nature. In rare instances nothing seems to happen, and the drug may be said to grow old gracefully. Such is the case with ether, which was introduced more than one hundred years ago and yet continues today as the most widely used general anesthetic agent. Clearly, age is no handicap to those products that are fortunate enough to fill a real need.

In contrast to this are drugs that become obsolete and sink quietly into well-deserved oblivion. Asafoetida can be cited as an example. It has been the policy of the Food and Drug Administration to allow this process of evolution in drugs to follow its natural course, as long as the claims made for a drug are not inconsistent with scientific knowledge.

Sometimes there is even danger that a drug will become obsolete prematurely. Some twenty-five years ago, the use of watery extracts of ergot in obstetrics was held up as an example of the blind continuation of a thoroughly irrational practice. All the pharmacologists knew, or at least thought they knew, was that the active alkaloids in ergot were insoluble in water. It was the dogged persistence of the obstetricians that led to a reexamination of the problem and the discovery that ergonovine, the alkaloid, had sufficient water solubility to account for the activity of the extracts. As the advantages of pure preparations of this new alkaloid became apparent, the water extract fell once more into disuse because of poor stability.

Drugs can become dangerous in a variety of ways. Occasionally the incidence of adverse reaction is so low that many years pass before the causal relation is established. Actually the drug was dangerous all along, and it is only the awareness that is new. Aminopyrine enjoyed tremendous popularity before it was discovered to be the cause of occasional cases of agranulocytosis. Now its sale is restricted to prescription so that the physician can weigh this risk against the needs of the patient.

Misuse of drugs by the public is also an important factor. At one time inhalers containing amphetamine (benzedrine) were available for over-the-counter sale. The inhaler served as a source for the drug and resulted in its misuse as a central nervous system stimulant. This misuse was corrected by substituting propylhexedrine for amphetamine in the inhaler, which has decidedly less effect on the central nervous system.

The discovery of better and safer drugs rendering earlier treatment obsolete is a third factor. The development of antibiotics for the treatment of syphilis relegated such heavy metals as mercury and bismuth to a minor role.

When a dangerous drug appears on the market today, it is usually a consequence of breakdown in control procedures. An offending drug may be nonsterile, pyrogenic, of incorrect strength, or even mislabeled. As soon as the error is discovered, the producer is usually eager to recall the material from the market. If not, the Food and Drug Administration has the product seized, and by adequate publicity warns the physicians, and, if necessary, the public in the area where the dangerous drug has been distributed. If physicians will report their significant adverse reactions to FDA, it will be of great assistance to us in discovering these dangerous batches and seeing that they are removed from the market before further injuries can occur.

The First Ten Years of the World Health Organization

N. E. A. LEPPO, M.D.
Duluth, Minnesota

IMMEDIATELY after the 105th Annual Meeting of the Minnesota State Medical Association, the Eleventh World Health Assembly (the annual meeting of the governing body of the United Nations World Health Organization) was held in Minneapolis from May 26 to June 14, 1958. This honor as host for the World Health Assembly, held for the first time in the United States, was given to Minnesota as a recognition of the outstanding pioneer work performed by our medical and public health institutions in Minneapolis and Rochester. The Minnesota State Medical Association had a special session on world health problems at the annual meeting.

Tenth Anniversary Session

The Eleventh World Health Assembly was preceded by a special two-day commemorative session marking the tenth anniversary of the World Health Organization and this was held from May 26 to May 28, 1958, in the Minneapolis Municipal Auditorium. Dr. Sabih Hassan Al-Wahbi, former Minister of Health of Iraq and President of the 1957 World Health Assembly, presided over this solemn meeting. Several hundred delegates and observers from all over the world were present.

Governor Orville L. Freeman of Minnesota and Mayor P. Kenneth Peterson of Minneapolis addressed the members of the assembly and wished them welcome in the heart of America. Francis O. Wilcox, Assistant Secretary of State for international organization affairs, welcomed the assembly on behalf of the United States Government. Philippe de Seynes, UN Undersecretary for economic and social affairs, spoke on behalf of the United Nations and the specialized agencies.

The highlight of the tenth anniversary session was the greeting by the President of the United States which was presented to the assembly by his brother and personal representative, Dr. Milton S. Eisenhower, President of Johns Hopkins University. It read in part:

"The tenth anniversary commemorative session of the World Health Organization directs our attention to the fact that the nations of the world are working together in harmony for the improvement of the living conditions of all peoples.

"As a result of the work of the WHO and the stimulating leadership it has given to its member states, millions the world over are spared from disease and suffering that would have been their lot.

"The United States is proud of its part and the part of its health leaders in this mutual endeavor. We look forward to even greater accomplishments in the control of disease, in the building of health services and in the opening of new avenues of medical knowledge through research.

"We look to the WHO with confidence as a proven instrument through which the nations and the peoples of the world can combine their efforts, in friendship, toward the building of true peace."

WHO, Dr. Eisenhower said, faces two main tasks: eradication of those diseases that science now knows how to control; and discovery of



After delivering his speech, Dr. Eisenhower joined members of the U.S. delegation listening to Ministers and Secretaries of Health from other countries reporting on health progress in their own countries. For some of the speeches, he made use of the simultaneous interpretation system, listening on his earphones to the English interpretation. At right of picture is Senator Edward J. Thye, Honorary U.S. delegate to the Tenth Anniversary Commemorative Session.

measures for the ultimate conquest of other diseases for which no control is known yet. WHO has rendered valuable service in helping nations control and eradicate diseases such as malaria, yaws and trachoma, he said, adding:

"As the infectious diseases—the historic scourges on mankind—are gradually brought under control and eradication, we find other problems moving into the foreground of our concern. Two such are heart disease and cancer.

"We know that intensive exploration will solve the mysteries of heart disease and cancer—that a way will be found. It is even now a question of when, not whether. Where is almost immaterial. For the man or woman who achieves this final breakthrough may come forward in any part of the world."

A year-long study by the world's medical leaders on how research can best be used to fight cancer

and heart disease was then proposed by Dr. Eisenhower. He stated that the United States would contribute $300,000 to such a study. "From this study," he said, "we would anticipate the emergence of a plan that would merit the support of member states. Furthermore, the United States is prepared to consider providing substantial support for any sound program that may result from the study."



After being unanimously elected President of the Eleventh World Health Assembly, Dr. Leroy E. Burney, Surgeon-General of the Public Health Service of the United States, takes his place on the tribune. Here he is being congratulated by WHO Director-General M. G. Gandau *(left)* and Dr. Sahib Hassan Al-Wahbi, President of the Tenth Anniversary Session *(right)*.

The ministers and directors of public health and other leading officials of the eighty-eight member countries were present. Dr. Brock Chisholm, the first former Director-General of WHO, Dr. Al-Wahbi, President of the commerative session, and Dr. M. G. Candau, Director-General of WHO, summed up the objectives, activities and accomplishments of WHO in the first ten years of existence. Thereafter, a great number of official delegates of member governments reviewed the progress made in the field of public health in the respective countries over the past decade.

Among other prominent personalities present were Mr. Marion Folsom, U. S. Secretary of Health, Education and Welfare, and Dr. Charles Mayo who were official delegates of the United States, with Mr. F. O. Wilcox, for commemorative session. Among alternate delegates may be mentioned State Senator Edward J. Thye, State Senator Hubert H. Humphrey, and Congressman Walter H. Judd, M.D., who were instrumental in bringing the World Health Assembly to Minneapolis.

Dr. LeRoy E. Burney, Surgeon-General of USPHS, chief U. S. delegate, was elected as President of the Eleventh World Health Assembly. His predecessors, Dr. Thomas Parran and Dr. Leonard A. Scheele, were also present. Among other alternate delegates were seen Dr. David Allman, President of the American Medical Association, Dr. Martha Eliot, former chief of U. S. Childrens Bureau and former assistant Director-General of WHO, now professor of Child Health at Harvard University, Dr. H. Van Zile Hyde, Chief, Division of International Health, USPHS, and Dr. Frank H. Krusen, Professor of Physical Medicine and Rehabilitation, Mayo Clinic and Dr. Jonas E. Salk, Professor of Experimental Medicine, University of Pittsburgh.

Among advisers of U. S. delegation were Dr. Gaylord Anderson, Director of School of Public Health, University of Minnesota, Dr. R. N. Barr, Secretary and Executive Officer of Minnesota Department of Health, who was chairman of the Committee on Local Arrangements, and Dr. Harold S. Diehl, Dean, School of Medical Sciences, University of Minnesota.

A summary of the WHO activities during the past ten years is presented in the following as described in documents and above-mentioned speeches.

How WHO Came to Being

At its founding meeting in San Francisco in 1945, the United Nations issued an implicit mandate for the creation of a health organization to be included among its specialized agencies. In 1946, an International Health Conference attended by representatives of sixty-four nations, was held in New York city to lay the ground work for the establishment of the proposed UN agency. A WHO Constitution was drafted on this occasion, to become effective when twenty-six nations would ratify it. In the meantime, an Interim Commission was set up to carry on international health activities pending the emergence of a permanent World Health Organization. The program and some of the personnel of previous international organizations, the League of Nations Health Organization and International Office of Public Health, were transferred to Headquarters of WHO Interim Commission in Geneva. The twenty-sixth country ratified the Constitution on April 7, 1948—since recognized globally as World Health Day—and the WHO was officially launched as an integral part of the United Nations.

The first World Health Assembly was held in Geneva in July, 1948. Dr. Brock Chisholm, wartime chief of psychiatry in the Canadian Army and a renowned humanist, was elected Director-General of WHO. He held this post until 1953 when he was succeeded by Dr. M. G. Candau of Brazil, then assistant director of the PASB and formerly of the Brazilian Government's Co-operative Health Services.

Development of WHO Programs

The development of WHO and its programs during the first ten years have been phenomenal. The Organization can look back with pride on the accomplishments of the last ten years which

have brought about a virtual revolution in man's approach to health. While WHO does not conduct health programs of its own, it has acted as a helping technical expert, adviser, co-ordinator and catalytic agent to assist national governments in setting up various health services lacking, to some extent, in most parts of the world. The increase in WHO's membership from 26 states in early 1948 to 88 present, and the rise of its budget, contributed by the Organization's Member States, from less than $5 million ten years ago to $13,500,000 this year, are proof of recognition of the need for health planning and activities on an international scale.

In 1948, direct assistance to national governments in the form of international staff and field projects was a new and almost revolutionary idea. Today the World Health Organization has over 500 professors, doctors, nurses and other health personnel in the field, and in one way or another is assisting 700 health projects in 120 countries and territories.

Communicable Diseases in Retreat

During the last ten years, intensified national and international efforts have forced communicable diseases into retreat over a wide front. In countries with well-developed health services, diseases such as diphtheria and whooping cough and, in some cases, even tuberculosis, have ceased to be important public health problems. Great scourges of tropical and sub-tropical areas such as malaria, and treponemal diseases including yaws, have been attacked vigorously with the aid of WHO and other international aid programmes.

These are, however, only partial successes. Parallel with the retreat of the more commonly known communicable diseases in countries with highly developed health administrations, other diseases, such as poliomyelitis, cancer, cardiovascular diseases and mental health afflictions, have become more serious. No sooner do certain diseases appear to be succumbing to control methods when, unexpectedly, they acquire a new lease on life through the adaptive ability of either the micro-organism which causes the disease or the vector which carries it.

Malaria is a good example of the latter type of set back. Ten years ago malaria was, in tropical and subtropical countries, public enemy number one. It was estimated to cause three million deaths every year, out of 300 million cases. Today, the number of deaths has been reduced to about 1.5 millions and the number of cases to about 150 millions. This great improvement has been due to mass campaigns, in many cases encouraged and assisted by WHO and UNICEF (United Nations Children's Fund) in which residual insecticides such as DDT and dieldrin were used to cut the cycle of infection man-mosquito-man. However, from 1951 onwards, malaria-carrying mosquitoes in a number of countries began to show signs of resistance to insecticides. This meant that malaria control had to give way to malaria eradication, i.e., malaria had to be wiped out before developing resistance made the existing insecticides totally ineffective.



About 50 million people are thought to be infected with yaws. However, a single shot of penicillin will cure it, and by 1958 national teams assisted by WHO and UNICEF had treated 20 million cases. The child is shown before and after treatment. (Photo by Eric Schwab)

In 1955, the World Health Organization called upon member states to join a world-wide malaria eradication campaign. At present, malaria eradication has nearly been achieved in nine countries or territories, is under way in fifty-one others and has been initiated or planned in sixteen more, with an aggregate population of 1,156 millions, representing 73 per cent, of the total population of countries where malaria is, or has recently been, a problem.

In the fight against treponematoses, especially yaws, penicillin treatment has so far proved effective. Yaws, a non-venereal disease resembling syphilis that is widespread in tropical areas, is increasingly coming under control. Mass campaigns have been launched with international assistance in more than twenty countries and territories. By the end of 1958, it is estimated that half of the 200 million people living in areas where yaws is prevalent will have been examined, and 25 million will have received injections of long-lasting penicillin, at a cost of between $0.10 and $0.15 per person. Among those examined, the 15 million with the disease in an active form will have been reduced to about half a million. With the prospect that yaws may ultimately be eradicated from rural areas of many countries, the emphasis of WHO programmes will shift to the attack on venereal syphilis in the urban areas of those countries where it is still found.

In the case of tuberculosis, prophylaxis has played an important part during the ten-year period. The WHO/UNICEF BCG vaccination campaign has reached over 200 million young persons tested and nearly 90 million vaccinated in fifty-

eight countries. However, due to the discovery of new anti-tuberculosis drugs, emphasis has now shifted onto "ambulatory" chemotherapy (and chemoprophylaxis) which allows sufferers to remain in their own homes while undergoing treatment. These methods are now being tried out in several pilot projects.



Infectious eye diseases such as trachoma and conjunctivitis cause much suffering and can result in partial or total loss of vision. Tetracycline saves the eyesight of thousands like this child, photographed before and after receiving treatment. (Photo by Homer Page).

Another disease against which mass campaigns have been assisted by WHO is trachoma, an eye disease leading to blindness, affecting an estimated 400 million in tropical and sub-tropical areas.

Environmental Health

Apart from its manifold activities dealing with specific diseases, WHO has given special attention to the problem of controlling the environmental conditions which favour ill-health. Under the generic name "Environmental Sanitation," a Division has been established to deal with such problems as safe water supply, sewage disposal, rural hygiene, housing standards, air and water pollution, and allied subjects. The importance of this work is indicated by the fact that, by 1957, WHO staff assigned to demonstration projects, at one time or another, included ninety sanitarians and sanitary engineers.

In the field of nutrition, kwashiorkor and other conditions associated with an insufficient intake of proteins are now one of the main concerns of the Organization. Much progress has been made in dealing with protein deficiency, especially in the diet of young children, after weaning, by developing processed, protein-rich foods from local materials, particularly in countries where milk and milk-products are not generally available.

Essential to the health of the community is maternal and child care. A marked expansion and improvement of maternal and child health services, largely as a result of the establishment of paediatric schools, and special refresher courses and in-school training programmes, have taken place in the 54 countries and territories which, by 1957, had received assistance of this kind from WHO and UNICEF. According to the United Nations Demographic Yearbook, life expectancy has increased almost everywhere in the world. In some of the countries undergoing rapid development, life expectancy at birth has increased up to eleven years for girls and ten years for boys during the past ten years.

Regional Organization

To enable it to adapt its programmes to varying and evolving needs, WHO from its inception decided to set up six regional organizations. This decentralization is now complete, and regional offices have been established, for Africa at Brazzaville, French Equatorial Africa; for the Americas (the Pan American Sanitary Bureau) at



This mother's feet have been mutilated by leprosy. Her baby is *not* condemned. It has been shown that the new sulfone drugs can arrest leprosy and prevent its spread. People who suffer from this disease are being treated and many are being cured. They need no longer live a life apart. (Photo by Pierre Pittet)

Washington, D. C.; for South East Asia at New Delhi, India; for Europe at Copenhagen, Denmark; for the Eastern Mediterranean at Alexandria, Egypt; and for the Western Pacific at Manila, Philippines. These regional offices maintain close co-operation with national health services, in order to carry out one of WHO's principal activities—"to assist public health administrations everywhere to take the next feasible step in their development."

Training of Health Personnel

It soon became apparent that a severely limiting factor was the lack of adequately trained medical and health personnel of all categories in the areas where they were most needed. In recent years, therefore, more and more countries have asked WHO for help in strengthening their national schools and training institutions for health personnel. Individual expert consultants or teams of various health experts are sent by WHO to different countries according to local needs. Almost all field projects are in some form or another also training grounds for local personnel from the country or region concerned. Furthermore, WHO provided, between 1952 and 1957, eighty-six professors to forty-two medical training institutions in some twenty subjects. Teams of visiting scientists, consisting of 132 professors from fifty-two different medical schools, visited thirty-seven other medical schools in thirteen countries.

In addition, WHO, over the last ten years, has awarded 6,396 fellowships to health personnel from 149 countries and territories for study in 113 other countries and territories. The fellows were usually doctors or graduates in medicine holding other diplomas (65 per cent), nurses (12 per cent), sanitary engineers and sanitarians (6 per cent) and other qualified health workers (17 per cent). The subjects studied fell into three major groups: organization of public health and preventive medicine (58 per cent), control of communicable diseases (28 per cent) and medical education, clinical and basic medical sciences (14 per cent).

Expert Panels and Research

The expert panels on specific health problems established by WHO have proved so useful that by 1958 their number had increased to thirty-six. They include about a thousand health authorities and leading medical scientists from all over the world, and cover subjects as varied as addiction-producing drugs, maternal and child health, insecticides, mental health, nursing, nutrition, professional and technical education and, of course, leading diseases such as malaria, leprosy, tuberculosis, virus diseases, and others.

From these panels, expert committees are called together when required, to review the latest developments in practice and research in their particular fields and to make recommendations to the Organization which are usually passed on to governments and medical institutions. In addition, WHO has convened a great many study groups on health problems, and particularly those requiring co-ordination of research.

A good example of WHO's work in co-ordination of research is the setting up of the World Influenza Centre in London in 1947, to which, in subsequent years, a network of national influenza laboratory centres was attached, working in close co-operation also with the International Influenza Center for the Americas at Montgomery, Alabama. By 1958, there was a total of sixty such WHO-designated influenza centres in forty countries. When an outbreak of influenza occurs the influenza centre in the area concerned reports its extent and severity and identifies the type of virus concerned. Strains of this virus are then sent to the two international centres where they are cultured for vaccine production. The value of this influenza network was strikingly exemplified during the world-wide epidemic of "Asian" influenza in 1957, when a number of countries were able to prepare vaccine even before the epidemic reached them.

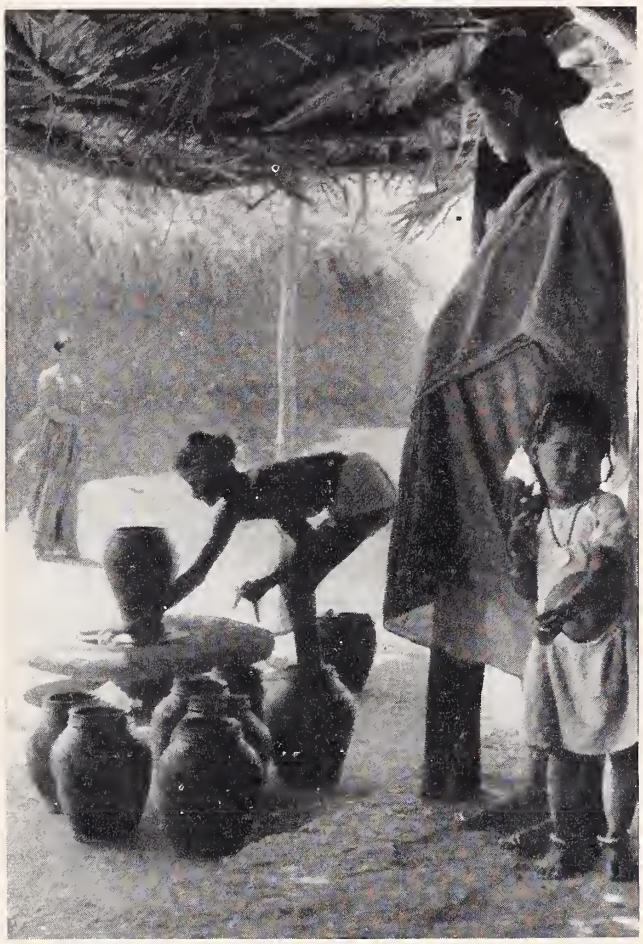


There were hundreds of millions of sick and crippled people who needed and were not receiving medical care at the end of the last world war. This polio-stricken Japanese boy is one of many who have been helped by services of WHO and UNICEF during the past ten years. (Photo by Dominique Darbois)

International Quarantine

When WHO came into being it took over the responsibility for the administration of the existing "international sanitary conventions," regulating quarantine practices in the signatory nations. However, there was no uniformity and certain of the

regulations were excessively strict. This multiplicity of conventions was therefore replaced by a single code, the "International Sanitary Regulations," which were adopted by the Fourth



Health begins when life begins. This Indian mother will have the care she needs to ensure that her child is born in good health. WHO and UNICEF are helping many countries to train personnel capable of providing mother and child health services (Photo by Eric Schwab)

World Health Assembly in May, 1951, and came into force on October 1, 1952. The new regulations are designed to give the greatest protection against the spread of epidemic disease with minimum interference with travel and trade. One hundred and forty-five states and territories have accepted these regulations without reservations and twenty-two with reservations that were found admissible by the World Health Assembly.

The epidemiological intelligence service, which warns of the occurrence anywhere of the "quarantinable" diseases (plague, cholera, yellow-fever, smallpox, typhus and relapsing fever) has been greatly strengthened and expanded since 1948. Daily bulletins are transmitted by short-wave radio from the WHO Headquarters, Geneva, to all parts of the world, while weekly regional bulletins are broadcast from Alexandria and Singapore and a network of stations in Southeast and Eastern Asia, so that not only public health authorities everywhere but also airports, ports and ships at sea can pick them up. In addition, a printed weekly epidemiological record, including statistics on many important diseases, is given world-wide distribution by air-mail from Geneva.

Standardization of Drugs and Medicaments

Another service rendered to governments by WHO was the publication of the *International Pharmacopoeia,* the first volume of which appeared simultaneously in English and French in 1951, and the second in 1955. Both are also published in Spanish editions. The *International Pharmacopoeia* contains specifications for 400 pharmaceutical preparations which are recommended to serve as a basis for the establishment of national specifications. In the field of biological standardization, WHO has established fifty new standards since 1948, ranging from diphtheria antitoxin to a whole series of antibiotics. In this work, more than 100 laboratories in different parts of the world have co-operated.

Before any problem can be tackled, its extent must be measured. This is particularly true of health problems and WHO has, during the last ten years, helped countries to improve and standardize their methods of collecting and interpreting mortality and morbidity statistics.

WHO also issues a series of statistical studies on the most important diseases and publishes each year a volume of *Annual Epidemiological and Vital Statistics.*

WHO has published technical works comprising more than 200 titles covering some forty health subjects. The *Technical Report Series* embodies about 150 reports of Expert Committees and Study Groups, while almost forty *Monographs* have been produced dealing with specific health problems. In addition, there are the WHO *Chronicle* and the WHO *Bulletin,* both technical periodicals, the *International Digest of Health Legislation,* and a number of publications dealing with medical training.

Future WHO Programs

With widespread advances against ancient diseases recorded in its first ten years of work, the World Health Organization is now giving increasing attention to new health hazards found in an age of developing industrialization. One of the major concrete results of the eleventh World Health Assembly planning future programs was the resolution on atomic energy. The assembly requested the Director-General:

1. To prepare a program of concrete measures in the field of health aspects of the peaceful uses of atomic energy and their long-term implications.

2. To give early emphasis to "research designed for determining the relationship between radiation dosage and congenital defects and to methods for the notifica-

tion of public health authorities of congenital defects which could be due to radiation."

3. To report also on "methods for the reporting of radiation exposure in individuals."

The resolution clearly took in "radiation from all sources." Radiation from atomic products and x-rays are the same scientifically, and in their effect on the body. The resolution on atomic energy was originally proposed by the Soviet-Russian delegation and after certain modifications it was unanimously approved. Authorities everywhere must move in these directions, said Dr. LeRoy E. Burney, Surgeon-General of USPHS and Assembly President. He reported that in the United States some fifteen states, not yet including Minnesota, have started registration and routine inspections of x-ray equipment. The problem is mainly to have enough trained personnel to do the job.

Among other important decisions of the Eleventh World Health Assembly was the approval of the American proposal for a one-year study of ways WHO can start new research among nations, especially in cancer and heart disease, for which the United States offered $300,000. The world wide small pox eradication campaign originally proposed by U.S.S.R., was also approved.

The United States Stake in WHO

Economic and social deevlopment is needed to heal a sick world of today and set it on its feet. We have in the United Nations and its specialized agencies all the machinery needed for the purpose, but the machinery is idling for lack of financial and personnel support. More than half of the world's population is crying for relief from disease, hunger, premature death and poverty. We have to accept the fact that communism breeds on this filth, disease and human misery. Therefore, it is extremely important that fortunate well-developed countries like the USA help underdeveloped areas of the world. It is humane for one thing, but beyond that underdeveloped countries cannot develop economically and cannot gain the strength for political freedom unless they are healthy. Fighting disease is an important part of building a strong free world.

American doctors and other health workers have realized the great challenge of WHO. We can be proud that no other nation has contributed to world health as much as the United States. Our government pays a third of WHO's 14 million dollar budget and is spending 63 million dollars in all this year through WHO and other UN agencies as well as two-way arrangements with those nations helped.

Leaders of American medicine and public health have contributed with their special knowledge and skills to most WHO programs. For instance, practically all WHO expert committees have American members. Our public health schools, which are the best in the world, are continuously training doctors and other health workers coming from all over the world. American experts in various fields of medicine and public health, among them many Minnesotans, have been sent as WHO consultants to different parts of the globe.

WHO and other specialized agencies of the UN have shown the way, because there is ample evidence that in the field of public health and improvement of nutrition and other social conditions we have a unique meeting ground for the people and nations of the earth, potentially the most fruitful avenue toward the coveted prize of a world of enduring peace. Therefore, we must continue to give our whole-hearted support to the work of WHO and the United Nations in general.

HEART ASSOCIATION ANNOUNCES AWARD FOR SCIENTIFIC STUDIES

Completing a first decade of research support, the American Heart Association has announced that a total of approximately $8,000,000 will be expended for scientific studies in the field of the heart and blood vessel diseases during the 1958-59 fiscal year. This is the largest sum the Association and its affiliates have ever spent for cardiovascular research during a single twelve-month period. Funds for this research come from public contributions to the annual Heart Fund appeal.

Awards will include 226 grants-in-aid totalling $1,540,457 to scientists working in thirty-six states and one foreign country (Lebanon). These grants, made by the American Heart Association's national research committee, represent an increase of more than 20 per cent over comparable grants awarded last year. They are additional to 186 national fellowship awards totalling $1,523,147 announced earlier this year.

Many of the grants are concerned with still unexplained aspects of the heart muscle itself and of the bodily mechanisms that result in heart failure and heart attacks. Other studies are attempting to clarify the chemical and electrical processes that make it possible for the heart to beat and to maintain the pressure necessary to pump blood through the body.

A major target is atherosclerosis or "hardening of the arteries," the condition underlying most heart attacks and strokes. With high blood pressure, atherosclerosis is responsible for more than 90 per cent of all deaths from circulatory disease in the United States. Studies related to atherosclerosis and high blood pressure account for approximately one-half of the research to be undertaken with the aid of these grants.

Studies of high blood pressure are seeking to determine the underlying causes of this ailment. The role of table salt in high blood pressure, the part played by the kidney, and the possibility that the central nervous system, including the brain, may be involved, are a few of the problems being investigated.

The function of the kidneys and the influence of diet and hormones on the ability of the kidneys to do their work, the possible relationship of heart disease to certain chronic diseases of the lung, the basic cause of rheumatic fever, problems confronting surgeons seeking to transplant the human heart, development of an artificial lung modeled after the human lung to enhance the efficiency of heart-lung machines and other improvements in surgical techniques—these are some other problems being studied with the aid of the Heart Association grants.

Editorials

John F. Briggs, M.D.
Arthur H. Wells, M.D.
Henry G. Moehring, M.D.

SEPSIS—A PROBLEM FOR EVERY PHYSICIAN

Sepsis acquired by patients or personnel in hospitals is a serious problem throughout the world. The obvious clinical entity, postoperative sepsis, comprises but a portion of a poorly recognized problem of increasing magnitude. Pneumonitis, pyelonephritis, enteritis and septicemia in medical patients; mastitis and metritis in obstetrical patients; enteritis, conjunctivitis, skin disease in newborn and pediatric patients; furunculosis and dermatitis among personnel, all cause an alarming morbidity and mortality in some hospital populations.

More and more hospitals recognize the problem and the incidence of sepsis rises in those that have sought to control its spread by conventional means. Indeed, septic complications persist in institutions where asepsis, wound care, and communicable disease control are of high standard.

Staphylococcus sepsis is the major apparent problem. Infections by gram-negative bacteria and even yeasts are reported from isolated hospitals as well as geographically grouped hospitals. Specific strains of bacteria have been described as characteristic of individual hospitals. Therapy by antibiotics is only temporarily effectual in each environment because causative organisms emerge that are resistant to chemotherapeutic agents.

Obviously, etiologic factors are present that are of greater importance and more general effect than are encompassed in current concepts. Investigation of hospitals harassed by sepsis has demonstrated environmental factors responsible for the multiplication and periodic spread of organisms in enormous numbers to the nasopharyngeal mucous membranes of patients and personnel.

The rôle of inflamed and traumatized mucous membrane is unappreciated as the crucial portal of entry for bacteria that are spread by the hematogenous route. Acute upper respiratory disease provides opportunity for occasional predacity by organisms that parasitize carriers among patients and personnel. Florid multiplication of the parasitic organisms occurs in the inflamed mucous membranes with the resultant massive dissemination to the environment. The classical mucous membrane barrier against bacterial invasion is breached by increasingly frequent instrumentation-intubation with irritating plastics that cause chemical burns and unskilled instrumentation that abrades and lacerates. Such wounds incite bacterial invasion of the blood stream. The traumatized mucous membrane is a recognized portal of entry for genitourinary sepsis. The concept must be extended to include the mucous membranes of the respiratory and gastro-intestinal tracts.

Suppression of sepsis in a hospital involves an orderly appraisal of many vectors to determine those hazardous in a particular institution. Much can be learned by inspection, but ultimate success depends upon periodic bacteriologic study of the environment to demonstrate the hygienic safety of routine hospital procedures. It is a paradox that communities with safe water and food supplies should tolerate, hospitals that do not evaluate the bacteriologic quality of their services.

The physician's education enables him to marshal data significant to hospital hygiene. The staff of every hospital must interest itself in safe operation and present the trustees with periodic reports concerning compliance with criteria for hygienic service. It must also stand ready to assume the responsibility for interpreting the data in the form of recommendations for corrective action. Like safety, quality control is a planned program that stems from the top of an organization. The application of current knowledge of the ecology of sepsis is as much the physician's responsibility as the prescription he writes for antibiotic control of infection.

Each hospital staff should establish criteria that assure a hygienic environment. A suggested list includes:

A. *Behavior*
- Strict isolation of sepsis
- Exclusion from the hospital of staff and personnel with respiratory disease or pyogenic lesions of the skin
- Safe masking habits
- Freshly laundered clothing, clean shoes in aseptic locations
- No beds or litters brought into aseptic locations
- Proper decorum

B. *Inspection*

Positive pressure ventilation in aseptic locations
Clean plenum chamber in air conditioner
Clean humidifier in air conditioner
Closed doors in corridors and stair wells

C. *Bacteriologic Control*

Floor count	—OR	5 or less sq. cm.
	—WARD	10 or less sq. cm.
Air	—OR	10 or less cu. ft.
	—WARD	20 or less cu. ft.
Bed rail		10 or less sq. cm.
Soap		Sterile
Bedside water		Comparable to local tap water
Textile		2 mm. zone of inhibition about a swatch imbedded in seeded agar
Laundry		20 or less sq. ft.
Blankets		20 or less sq. ft.

Harassed administrators can recruit effective allies for a continuing program from the women's auxiliary. Housewifely cleanliness, lacking in many hospitals, is a major factor in control.

CARL W. WALTER, M.D.

A CURVE

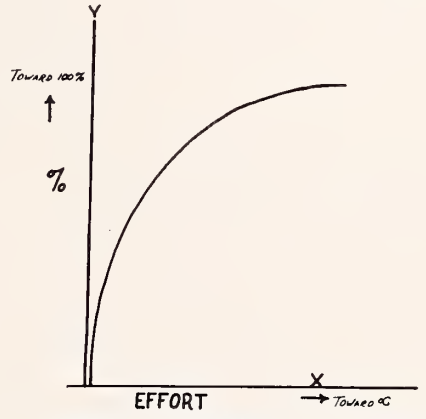
The accompanying graph depicts the inverted hemiparbola of Parfait. Essentially, it is the curve of approach of an organism to a point when the organism travels half the remaining distance to the point per unit of time. In some approximate way or other, it can be applied to anything that has a living factor in it:

If you plot the contribution from your efforts to others *via* income tax, with the effort plotted along the X axis, and the percentage of your earnings contributed to others as tax along the Y axis, you get such a curve; i.e., the more you exert yourself to earn, the higher the percentage of what you earn goes to benefit of others until, conceivably, if you exert yourself infinitely, the entire proceeds of your earnings would be income tax—and this should be the ultimate of doing good unto others.

Similarly, if you plot the care and energy exerted by everyone to wipe out traffic accidents along the X axis, and the percentage of miles driven accident-free along the Y axis, you'll get this sort of curve; i.e., if everyone really bent every effort to cut out traffic accidents, all miles driven would be accident-free.

And so on . . . right here is a universal truth, if only someone would come along and express it more simply.

This curve can be applied to diagnostic or therapeutic success. Plot the summation of the energy you expend toward making diagnoses along the X axis and the percentage of correct diagnoses along the Y axis. Same curve. You find that you have a relatively high yield of diagnostic accuracy from the first few ergs expended; e.g., one look



INVERTED HEMIPARABOLA OF PARFAIT

at the patient as a whole and a consideration of his presenting complaint give you, let's say, 25 per cent correct diagnoses. Then you exert yourself moderately with a medical history and a physical examination, a lot of ergs, and your accuracy reaches 67 per cent. Thereafter, the usual everyday aids to simple physical diagnosis, from the laboratory and x-ray studies, past and family medical histories (this takes not only energy, but now the patient is beginning to squander some of your energy by interposing objections to the costs of some of this energy expenditure) and your accuracy goes up to maybe 90 per cent. Now comes that flat part of the curve at the top. If you really open all the stops, you exploit the extraordinary diagnostic procedures (time-consuming blood chemistry determinations, biopsy, therapeutic trials, exploratory operations, et cetera) and, because you haven't fulfilled the requirement of exerting an infinite amount of energy, you never do reach the 100 per cent mark in diagnoses. No wonder they say a specialist is different from a general practitioner only in that he is more thorough—he has to be, he's working on that last 10 to 15 per cent of the curve.

What does all this get you? Throw in the sponge, it's no use after all? Not by any means. All this does is give you a quasi-mathematical explanation of your inability to achieve invariable diagnostic accuracy, and explain to you, and more importantly to your patient, why costs of medical care are going up. It isn't only that enclosed space and personal services are more expensive per unit.

Physicians have long since taken for granted a diagnostic accuracy, or therapeutic efficacy, in the big gains part of this curve. They are all working toward that tough flat part at the top where every unit of gain costs many units of effort. And neither they nor their patients are satisfied with anything less than being well up on that plateau.

H.G.M.

THE PATIENT WITH ACUTE MYOCARDIAL INFARCTION

I. The Diagnosis

Management of the patient suspected of having acute coronary insufficiency with myocardial infarction has three principal phases. Chronologically, these are establishment of the diagnosis, the medical and nursing measures involved in the treatment of the acute illness, and, finally, rehabilitation of the patient. In this editorial, it is my purpose to emphasize the importance of accuracy and also the responsibility on the part of the physician relative to the first phase.

There can be no argument with or criticism of the conscientious physician who diligently administers appropriate emergency measures including the use of opiates, hospitalization and rigid immobilization for the patient who complains of acute discomfort in the chest even though the pain is atypical for acute coronary insufficiency. In the practice of clinical cardiology, a wide variety of symptoms in a wide variety of sites have proved to be the referred distress of coronary occlusive disease. These facts will justify the therapeutic philosophy that suspicion on the part of the physician that prolonged coronary insufficiency has occurred is all the clinical evidence needed for instituting therapeutic and diagnostic studies to confirm or to deny that tentative diagnosis.

This statement has inherent in it a twofold responsibility for the physician—to confirm the diagnosis, which by implication means to treat, or to deny or eradicate that diagnosis if the tentative diagnosis proves to be unfounded.

With the ready availability of hospital facilities and their electrocardiographic and clinical laboratories, typical acute myocardial infarction can be diagnosed readily. Electrocardiograms, made serially, expose the changes characteristic of injury of the myocardium, and tests for transaminase disclose elevated levels in the serum offer specific and diagnostic evidence. On the other hand, elevation of the leukocyte count, fever and accelerated sedimentation rate of erythrocytes lack specificity and must not be used as evidence of myocardial infarction in the absence of the aforementioned specific evidence.

When specific objective evidence to support the diagnosis of heart attack has failed to appear after immobilization and observation in the hospital for a week for the patient who was strongly suspected of having acute myocardial infarction or for proportionately less time for the patient whose presenting symptoms were less suspicious-appearing, the evidence against the accuracy of the initial diagnosis is overwhelming. At this point, a significant responsibility of the physician often is overlooked. Professional and intellectual conscientiousness dictates that either appropriate examinations and consultations should be obtained to elucidate another etiologic basis for the presenting symptom or the physician must accept and explain clearly to his patient that the symptom was of no significance. This implies investigation aimed at locating a cause for the pain in the upper part of the gastrointestinal tract, biliary tree, skeletal or nervous systems, or lungs, in some cases or the decision in others that the symptom was either self-limiting and inconsequential or a manifestation of a psychogenic disorder.

In either situation, emphasis must be placed on eradication of the cardiac diagnosis from the mind of the patient. This must be done not by merely telling the patient that he is improved, but by a clear statement that the initial diagnostic impression was unfounded. Anything short of such complete intellectual honesty has led and will continue to lead to anxiety reactions on the part of the patient with associated morbidity, cardiac awareness and loss of self-confidence.

The improper clinical interpretation of such likely benign electrocardiographic findings as incomplete right bundle-branch block and episodic supraventricular arrhythmias is another frequent breeding ground for cardiac neurosis. When uncertainty exists, professional honesty dictates that appropriate consultation be obtained rather than permit the patient, by word or implication, to carry the burden of unfounded cardic disease.

Milton W. Anderson, M.D.

THE ROLE OF A DOCTOR'S WIFE

The life of a doctor's wife is not usually dull and is never scheduled. Many times I have felt a little abused when I have had to act as both host and hostess for a dinner party, or go unattended to a special function and offer excuses for a busy husband. The blow fell one day when my hostess said, "But we wanted your husband."

A doctor's wife learns early in her married life that his work comes first, before family obligations. She often wonders whether she married him or his profession, until she realizes that she is a vital part of that partnership. Her reaction to her role often has a direct bearing on her husband's practice in the art of healing. The doctor's wife, in common with other women, has the job of homemaking, with the myriad decisions about the family and house. She learns to change the burnt-out fuse, fix the frayed light cord, and cover the rose bushes. Not that many a doctor is not able, but he is either not available, or is accustomed to being waited upon at the hospital and office, and expects things at home to be in working order, too.

I was once told that only a nurse makes a good doctor's wife. The nurse, no doubt, has the advantage of understanding his work and the strains under which he works, but she does not hold all the trump cards on the personality and adaptability side of human nature. Many doctors prefer to leave their worries at the office and hospital, as far as possible, so they appreciate the change of emphasis at home. This may explain why doctors' wives cannot afford to be hypochondriacs; they wouldn't get any attention unless they were quite ill. No doubt many other professions take as much concentration of the husband, but none where the family get so little attention in his field of occupation!

Many doctors are now trying to regulate their schedules so that they can spend more time with their families and their hobbies. But when our daughters were growing up, they rarely saw their father except as a cherished vistor. Many a time some family outing would have to be rudely cancelled, due to an emergency. Many other doctors' wives feel that they have had to bring up their children single-handed, too.

There are many compensations in being a doctor's wife. There is enjoyment in being a sounding board for his account of human foibles (if the husband is in a talkative mood), but every wife knows that she must not repeat any information thus inadvertently learned. The doctor's wife shares in his pleasure in the recovery of a patient. She enjoys the reflected esteem in which her husband and his profession are held and she could not imagine being a part of any profession except that of medicine.

Being a good doctor's wife takes a lot of tolerance, forbearance, interest in people and their welfare, information, intelligence to evaluate and interpret people and their reactions, good nature, physical stamina, and much social consciousness. In other words, the doctor's wife is expected to be expendable, to be able to meet any situation. Socially, she is accepted anywhere so she must not be found unacceptable; mentally, her husband is an intelligent man, so she should make every effort to keep up with him and his various interests, as well as develop some of her own; spiritually, she should not lose sight of the knowledge and skill given doctors of medicine for the healing of sick minds and bodies; and the resiliency of the human spirit.

(Mrs. C. L.) Helen Oppegaard
Immediate Past President,
Woman's Auxiliary, MSMA

First of a series of editorials on the doctor's wife.

CHANGING PATTERNS IN MEDICAL LIBRARIANSHIP

Medical librarianship, like all professions serving the medical sciences, is on the march. Medicine, moving along a superhighway of progress, is heading toward newer and more significant discoveries tomorrow. Libraries cannot be far behind if the best traditions of research and service are to be continued. They must face realities that include increased budgets and more extensive spending. Up-to-date and comprehensive books are doubling in cost since a decade ago. More and still more periodicals in the specialties are becoming necessities. Consideration is focused on microfilm, readers and cabinets as answers to the serious problem of shrinking space.

And while this is happening, professional librarians are watching their own horizons stretch. Librarians have gone far, professionally, since their duties were first defined as the custodial care of books. They have skirted a technical era in which

Sixth in a series of editorials on medical libraries.

they applied themselves to the details of classifying and cataloging, of typing and pasting and mending. In smaller libraries, lacking clerical assistants, these essential duties still remain to "do-all" librarians. But even they can hope for liberation from routines and mechanics in order to give a more extended service using the intellectual skills with which education in library science equips them. Agencies are now offering a classifying-cataloging service that delivers books to libraries marked and completely processed even to book cards, pockets and catalog cards ready to file.

In what direction is professional librarianship moving? It is apparent that emphasis is being shifted partially from the angle of service, administration and maintenance and is falling on the function of formal and informal teaching. Working with individuals through research and reading guidance, with instructors on committees, calls for a dynamic program that gives the librarian a real part in the educational activities of an institution.

Formal teaching begins with orientation to potential users and may be extensive—as much as twenty-five hours in some medical schools—or limited to one or two hours in small teaching programs. In either case a thorough coverage of applied bibliography is in order. Teaching communication skills is veering more and more toward the medical library. From the custodian of the printed word the librarian has become the exponent of the correct word, both orally and written. With the influx of medical scholars from all nations, a librarian qualified for this teaching rôle is an asset and a blessing.

The care of the whole patient is a phrase that is much considered in the field of clinical medicine. Educating the whole person is an obligation which medical librarians are doing something about. If the medical library is the only library in the area to which a student or practitioner has access, he is entitled to more than a limited subject range of materials. People need education and re-education throughout their adult life. The medical library offers a unique possibility of keeping doctors and paramedical personnel from developing into one-sided thinking personalities. Informal teaching, through group and individual book guidance, not only aids professional personnel to become book critics and enthusiasts, but it is a contribution toward one of the current problems of our time. As an author expresses the dilemma, "We have more leisure time, there is more of us and we will live longer." An extended program into cultural and aesthetical subject fields may have a potential impact on the leisure time and aging aspects of the population.

Medical libraries are looking forward to the extension of their influence outside the parent institution. It is not difficult for them to team up—some public health libraries do this consistently—with workers in preventive medicine and to offer materials to auxiliaries, parent associations, philanthropic organizations and clubs which are searching for interesting and timely subjects for lectures and workshops. What librarian does not meet, in the course of one day's work, numerous references to mental health, to child psychology and to all aspects of the geriatric problem? Materials on subjects like these, which in medical literature are undiluted by the popular, and often emotional approach, can affect the thinking of a whole community.

Another recent trend is to regard libraries as materials' centers, that is, a center which will organize, maintain and service slides, films, recordings and tapes as well as books and journals. This calls for still more specialization on the part of library personnel. Since the financial output for a film collection is great, its planning and organization should be done by a specialist and it should be directed toward specific goals. Little imagination is needed to estimate the potentialities of a film collection in the field of medicine. Perhaps there is not a library of any size that has not a sample collection, at least. Because film is the communication media of our age, the most compelling and absorbing attraction of any time, medical libraries of the future cannot avoid providing for it. Sound proof listening rooms for tapes and teletapes as well as for therapeutic music recordings will be as common as the present day reading room. Most journals and many books will be stored in microfilm.

Larger units of service in which libraries join into systems by working together and sharing their services and materials is still another concept of the medical library of the future. Area union catalogs by which the holdings of all medical libraries in a locality will be made accessible to one another will be established in key positions so that libraries and patrons alike may get the most of the printed and filmed deposits of learning within a designated radius.

New and imaginative architecture is transforming dull, highceilinged, uninspiring rooms to light, colorful rooms with full wall windows and comfortable lounge furniture. In the future, temperature and humidity will be kept consistent and right both for patrons and for materials. Air borne dust, a menace in all libraries, will be removed through a mechanism in the air conditioning unit. Undoubtedly, large medical libraries will come in for a share of electronics—brains, book pluckers and material searchers. Even small libraries may hope for pneumatic tube systems leading from the areas of greatest research and study to the library. All of which will help ease personnel shortages in the field, but will never replace personalized services.

With the field of research growing wider and more intense with each succeeding year, librarians are hopeful that soon the public, especially the philanthropic public, will begin to realize the part medical libraries are contributing to the advancement of knowledge. A future in which libraries will share in government and industrial grants, in public and private endowments, is in the forward thinking of every medical librarian. When this becomes an actuality, medical libraries will have come of age.

Sister Teresa Louise
Medical Librarian

THE ROLE OF THE BASIC SCIENCES IN MEDICINE

III. The Physician and the Literature of Basic Science

It is axiomatic that today no one can read the whole of the currently appearing scientific literature in fields like the medical sciences. A few years ago, the German physiologist Rothschüh calculated that it would require about three years of full-time reading at a rapid rate to cover the printed output of one year of the physiological literature alone. It would be fair to multiply that time by at least ten to cover the entire medical science field. Thus one sees that it would take the better part of a working lifetime to read one year's output of medical writing. And the situation is getting more serious every year. Fifty years ago, there was only 3 per cent as much literature. Ten years from now, it is likely that there will be twice as much as there is today, if one can extrapolate from previous rates of increase.

This is a problem which has very serious implications for the future of all science, including medicine. It seems that there can be no easy overall solution to it. Better mechansims of abstracting and indexing, the introduction of new bibliographic tools, such as high speed sorting and retrieval machines, may assist the research worker greatly and allow him to avoid a great deal of the inefficient searching that he has to do today. Some such improvements will need to be made, however, or the medical research enterprise will become progressively less efficient and the spending of increasing amounts of money will result in decreasing returns on the dollar. In fact it is the opinion of this writer that the point of diminishing return has already been reached and that we should insist that more money should be put immediately into the bibliographic tools of science in order to protect our continuing investment in research.

At present, several agencies abstract the medical and other biological literature, but none of them covers more than a fifth of the total output and they duplicate each other to a very large extent. Furthermore, their abstracts are inadequate in scope so that a researcher cannot definitely ascertain whether an abstracted paper does or does not contain material relevant to his problem in many, perhaps most, instances. There is no adequate index even of titles of all publications in medical science.

The cost of doing a fairly adequate job of abstracting and indexing of the world literature in medicine and related fields might be estimated as five times the present cost of one of the inadequate services. This would mean about two million dollars per year.

In the current year, the U. S. Department of Health, Education and Welfare alone has obligated $110 million for research. The total U. S. Federal Government obligations for research and development in fiscal 1957 is $269 million. Thus, one is considering a sum approximating one per cent of the total spent. Obviously, this is a trifle in the total investment, considering the factor of increased efficiency, yet it is not being considered seriously at the present time in terms of a unified centralized operation for solution. The National Science Foundation and the Public Health Service both recognize the reality of the

problem. Greater public understanding of the problem is needed in order to allow investments of such size as to remedy the situation.

The problem for the physician in practice is different, but definitely a related one. He cannot spend more than a few hours a day in reading, and many cannot or do not find even an hour. For the latter category, the situation is hopeless because the advancing front of medical science has already left him far in the rear. But for the majority who make valiant efforts to "keep up" with the new things, there is increasing need for assistance. More and more, there is need for "brush-up" articles in the most widely distributed journals dealing with advances in the basic sciences which must be understood by the practicing physician if he is to grasp the newer advances in clinical medicine itself. Medical teachers and investigators must be willing to devote more time and energy to postgraduate education in all of its phases and by all of the useful mechanisms. And physicians will need to avail themselves of more such opportunities to keep abreast of the scientific times if they are not to become obsolescent practitioners of a craft rather than progressive practitioners of a learned profession. One can be an artisan without understanding. One can practice a learned profession only by remaining a scholar through one's lifetime.

MAURICE B. VISSCHER, M.D.

THE TRANQUILIZERS

Although several tranquilizers are also used widely for other conditions, the most dramatic and important effect of these drugs is the profound change they have brought about in the treatment of the mentally ill. Mental hospitals show many significant signs of this change. The locked back ward is gradually becoming a thing of the past. Psychotherapy is being used on more patients and to a greater extent because more patients have been made accessible through these drugs. More patients are released from mental hospitals, and fewer released patients return.

Furthermore, a significant change has occurred in the practice of the family physician who now finds himself treating mental and emotional disorders which five or six years ago were considered outside his province. By treating the early symptoms of mental illness, he may spare many patients from requiring hospitalization. By providing maintenance drug therapy, he also prevents the re-hospitalization of many released patients whose illness is still present, but whose symptoms are in remission.

The need for maintenance therapy is not surprising when one realizes that the tranquilizing drugs are ameliorative rather than curative. They no more "cure" mental disorders than insulin "cures" diabetes. Almost all released patients who have received drug therapy require the immediate support of drugs to help them face the stress of returning to the world outside the hospital. Most require it for several months; some may require it—either continuously or from time to time—for the rest of their lives. No one can accurately predict exactly how long any one patient is likely to need maintenance drug therapy.

Tranquilizing drugs are not alone responsible for the growing improvement in treating mental illness, however. The physician's utilization of these new tools coupled with his techniques of psychotherapy is the important contribution.

One of the most notable developments in modern medicine is the resultant increasingly important role the family physician plays in the treatment and management of mental illness.

MAURICE R. NANCE, M.D.

Second of four editorials on tranquilizers.

TRANQUILIZER ADDICTS

Physicians are advised to screen carefully requests of patients who desire prescriptions for sleeping pills, nerve pills, and other non-narcotic medications to which they have become addicted. Reports of such requests, received by the Minnesota State Medical Association within the past thirty days, are greater than those for any like period in the past.

Neurotic patients—frequently women—are going from doctor to doctor seeking such prescriptions. Often the reports have come from members of the patient's family who have noted alarming symptoms, mental aberration, or apparent drunkeness. The concerned relatives usually ask the Association to warn other physicians, by name, about the affected individuals. For obvious reasons the Association is unable to comply with such requests. However, it would certainly appear that a general word of caution is in order.

It is recommended that all physicians be on guard when new patients come to them with requests for specific medications. Remember, precautions similar to those recommended for dealing with the transient drug addict are here recommended. These include securing a complete history of the patient's ailment as well as making a complete and thorough examination in every case.

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

FORAND STRESSES SOCIAL SECURITY HOSPITAL AID NEED

Recently AFL-CIO newspapers published the following account of a radio address given by Democratic Representative Aime Forand in defense of Bill H.R. 9467 sponsored by him.

The presentation was aired on "Washington Reports to the People," an AFL-CIO sponsored public service program heard over 170 radio stations throughout the nation.

"It is most important," Forand declared. "I have a thousand letters here from persons in various parts of the country telling me of their plight. They need hospitalization. They need to have an operation. Yet they cannot afford it.

"The result is that they go without and suffer a great deal. If the government would actually step in, it wouldn't be the taxpayers paying the bill, but those who contributed to the system and who will be the beneficiaries."

Forand noted that retired persons "have reached that age when it is practically impossible for them to get private insurance. The government must take care of that."

Hospitalization and a ten per cent increase in benefits are provided for in the Forand bill, on which hearings have begun in the House Ways and Means Committee. Forand said that he did not consider the 10 per cent boost in benefits adequate, but "it is as much as I think we can get at this time."

The bill would increase the wage base, upon which the tax is based, from $4,800 to $6,000, which would add to the trust fund.

"The American Medical Association has gone on record as ready to put up an outright fight against the plan," Forand reported. "They're going the limit. They've engaged a public relations firm to advise them. They've put out all kinds of documents. They're doing a thorough lobbying job."

Forand said that all members of the AMA are not in agreement with the Association position.

"There is absolutely nothing in the bill that would place control on medicine," Forand said. "It gives the individual the privilege of selecting his own physician, his own surgeon, the hospitals to which he will go."

MINNESOTANS DO NOT NEED FORAND BILL, DELEGATION TOLD

United States senators and representatives from the state of Minnesota recently received copies of the Minnesota State Medical Association policy toward the Forand Bill (H.R. 9467).

The statement of policy, prepared by the Association's congressional legislative committee and signed by President Horatio B. Sweetser, was read into the recent hearings of the House Ways and Means Committee.

The report points out that in the opinion of the committee the Forand bill and other related bills are unnecessary, because the program as outlined in the pending legislation would be more costly than the present outstanding Minnesota aged medical care program.

According to the report:

"Any citizen of Minnesota who is over 65 and cannot afford complete or even partial medical care is eligible for free medical, hospital, nursing home, and dental care; and, all drugs, glasses and appliances are given to him at no cost. This applies to those persons who are on Old Age Assistance (3500) and to those who need extra help even if they are receiving Social Security (1400). The program is administered by the County Welfare Boards. It provides for free choice of hospital, nursing home if within a maximum cost range, and physician. Since the program was established in 1945, there has been an excellent working relationship between the Minnesota Department of Public Welfare, the recipients and the medical vendors. The average age of the recipients is seventy-seven years. In 1956-57 there were 50,244 cases which cost $18,642,684."

The committee also noted in the report:

"By letting the local County Welfare Board administer the program, only those who cannot afford medical care are made eligible for free care. It is also interesting to note that the local County Medical Society and the other health agencies cooperate very closely to help keep expenses at a minimum."

"The Minnesota State Medical Association's Committee on Geriatrics and Chronic Illness has received all the recommendations of the Joint Council to Improve the Health Care of the Aging. They are working to implement many of those suggestions and already some have been completed. For example, Minnesota long ago set up licensing standards for nursing homes. Presently

there are twenty-two new nursing homes and homes for the aged under construction. This will give us 701 more beds: 621 nursing home beds and 80 home for the aged beds. In 1957, eight new homes were completed adding another 166 nursing home beds and 129 beds for the aged. It has been recommended by our Department of Health that we need many more beds and our Committee on Public Policy as well as the Geriatrics Committee are working on the problem. Next year in the state legislature there will be a bill which would encourage through a financial matching fund the continued construction of nursing homes by non-profit groups.

"The Geriatrics Committee cooperated with the Department of Health in Minnesota in doing a pilot study in Wright County on home nursing services for the aged and disabled. Data obtained from this survey has helped the state in assessing the need for more home nursing courses, nursing home beds, and public health visiting nurses. It was found, for example, that a roster of trained younger people who will be available to help care for older people in their homes is necessary for the county. Private groups were encouraged to continue loaning medical equipment to the home bound patients. It was recommended that the Red Cross home nursing courses be expanded, that the county needs a recreation center for the senior citizens and that county nurses make older home bound people their first priority."

We sincerely hope that this statement will assure the committee that Minnesotans do not need H.R. 9467, concluded the report.

Members of the Minnesota congressional delegation have predicted a possible ten per cent increase in social security benefits, but the Forand proposal is not expected to receive committee approval this year.

A recent issue of the *Wall Street Journal* predicts:

"A social security bill will likely pass the House, but Chairman Byrd (D., Va.) of the Senate Finance Committee will try to hold it up. The measure probably would boost the maximum amount of income subject to the social security tax each year and contain a small increase in the tax rate."

Political Overtones of Social Security

Political observers are noting with interest the election year implications of pending social security legislation. Legislators favoring a hike in benefits may be casting an envious eye toward the growing ranks of senior citizens for potential votes.

According to recent Census Bureau estimates, there are now in excess of 15 million Americans in the sixty-five years and older age bracket. This is a 21 per cent increase over 1950.

In the forty-five to sixty-year age range, there are another 35 million persons, an increase of 12.8 per cent since 1950.

According to *Nation's Business,* those congressmen who oppose social security increases at this time base their sentiments on the following facts:

—Persons drawing benefits now number more than 11 million, an increase from 9.3 million last year.

—Cost will reach $8.7 billion in year ahead—up from $6.7 billion total year ago.

—Income will fall short of outgo.

Result:

—Trust fund will decline in years to come—even without new benefits, even with tax increases now in the law.

—Fund total was $23 billion last year.

—Six months ago it was expected to fall to $22.5 billion this year, slide off another $1 billion next year.

—Now the outlook's being revised again—downward, to $19 or $20 billion by 1962. Actuarially it's regarded as underfinanced for the long run—although tax rises are already scheduled.

—Rates will go up next on January 1, 1960, again in 1965, 1970, and 1975.

—Some congressmen are beginning to worry about mounting cost, diminishing trust fund—in face of fact that by 1975 one American in ten will be sixty-five years or older.

—Even with no increase in benefits, tax rates will nearly double by 1975.

Example:

—Person with annual pay of $4,200 now pays $94.50 tax.

—In 1975 he'll pay $178.50.

—Employer will have to match this.

Free Choice Out—He Says

Members of the medical profession who believe that the free choice of physician in the United States is one of those "certain inalienable rights" would do well to note the thinking of those who disagree.

Michael M. Davis, long a leading advocate of compulsory health insurance, who recently spoke before the Group Health Insurance Federation of America in Chicago, made these comments on behalf of such a plan:

"People's minds must be changed so that they will understand that 'freedom of choice' (of physicians) is actually quite meaningless today. The average citizen is in no position to make a wise choice of physicians, par-

ticularly not when he may need the services of a number of kinds of specialists. As we view present trends, it seems safe to predict that within ten years no more than ten per cent of payments for medical care will be made on a fee for service basis.

"The term, 'socialized medicine,' is used very loosely, indeed, by many agencies. I would like to point out to them that even the conservative Eisenhower administration has fostered the passage of legislation to provide medical care on a completely socialized basis for 2¼ million dependents of military personnel (Medicare)."

"The problem," Davis said, "is one of organization of medical services. Group practice is part of it. Hospital staff organization controlling the quality of care is equally important. Organizations for combating particular diseases or for meeting the needs of particular groups can go on and probably will.

"All of this seems to me to be good, but all such developments must be kept in perspective. Let me repeat that the organization of medical services is the major problem that lies ahead of us.

"In New York City today, no less than 40 per cent of all physicians are working on a salary basis and one-half of these are specialists."

Davis said that medical societies are beginning to realize they "are actually fighting against irrepressible trends. . . . Eventually we must extend group payment to the whole population."

VOLUNTARY PREPAYMENT PROGRAMS PAY $11 MILLION PER DAY

More than $4 billion—a rate of about $11 million per day—of the nation's health care bill will be paid in 1958 through voluntary health insurance programs, according to the Health Insurance Council, New York.

This estimate was based on the results of the council's 1957 survey of Health Insurance coverages in the United States. Benefit payments to help cover the cost of hospital, surgical, and medical care, last year amounted to $3.5 billion, up 20.7 per cent over 1956, and an all-time high.

The Council, in a projection of its 1957 figures on health insurance coverage in the U. S., estimates that some 123 million persons are protected against the cost of hospital expenses through voluntary prepayment programs, 111 million for surgical expenses, 74 million for regular medical expenses, and 15 million for major medical expenses. This means that about 72 per cent of the total U. S. civilian population today is protected by some form of voluntary health insurance.

Coverage through insurance companies under all forms of major medical programs rose by 49.4 per cent to 13,262,000 persons.

CIVIL DEFENSE CO-ORDINATOR NAMED

Marvin D. Tyson joined the Division of Local Health Administration staff July 1 as Civil Defense Co-ordinator. He will be responsible for keeping the Civil Defense Health, Medical and Special Weapons Defense Service plans current and co-ordinated with other Civil Defense services, maintaining an inventory record and status review of the pre-positioned Civil Defense medical supplies and equipment in Minnesota, and developing orientation and training programs to implement the Civil Defense medical plans. He will be available to medical, hospital and allied groups in their Civil Defense staff orientation and training activities.

Mr. Tyson comes to the Department of Health from the Minnesota Civil Defense Survival Plan Project.

Prior to his work with the Survival Plan Project, Mr. Tyson has had extensive experience with the State Department of Public Welfare, the American National Red Cross and Minnesota county welfare boards.

EYE FOUNDATION AND AMA DISAGREE WITH OPTOMETRISTS

The National Foundation for Eye Care and the American Medical Association are opposing a proposal of the American Optometric Association to authorize optometrists to make examination for blindness in all government programs. Following testimony by the optometrists to the House Ways and Means Committee, both professional groups sent letters to Chairman Wilbur Mills. The foundation repeated the argument that every time a person is declared blind by an optometrist alone, a chance is lost to determine the true medical cause of the blindness and to appraise chances of rehabilitation or cure.

The issue came before the Ways and Means Committee because it is now considering changes in the social security law, which authorizes optometrists to determine blindness in public assistance cases. The AMA also urged that for the protection of patients this authorization be dropped.

President's Letter

SCHOOL HEALTH

As we come toward the beginning of the school year, the importance of the health of the school age child may be reiterated. Concerned with the health of the school age child are not only physicians, dentists and public health nurses, but also school administrators and school personnel, voluntary health organizations and others, and, of course, particularly the parents. It is an accepted principle that the health of the child is the primary responsibility of the parents. But various agencies and organizations are also concerned. Next to the parents, the physician and then the school and public health authorities carry the responsibility; and we cannot forget that the teacher faces the children much of their day throughout the school year.

The Minnesota State Medical Association plays an active part in helping meet the health problems of children through its committees on child health and immunization and medical service. Committee members participate in the development of inservice training programs for physicians and dentists, nurses, school administrators and teachers.

At the invitation of Dr. A. B. Rosenfield of the State Board of Health, your president had an opportunity to represent the Association at a Minnesota Conference on Physicians and Schools, for school administrators, county superintendents of schools, physicians and dentists and nurses. Members of school staffs from all over the state were present, from Warroad to Caledonia, from Biwabic to Worthington. This conference was planned by the State Department of Health in co-operation with the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Association of School Administrators, Minnesota Department of Education, the Minnesota Congress of Parents and Teachers; with the co-operation and financial support of the Minnesota Heart Association.

School health programs are usually divided into three sections: health services, healthful school living, and health instruction. This conference considered each aspect of the program in group sessions which permitted a discussion of the individual problems of the participants and active participation by all. The case history method

was often used and your president was much impressed by the breadth and depth of the problems and discussions.

In the larger cities, not every physician is called upon, nor is able to help solve the problems. In the areas with fewer doctors, their contact with schools is much more widespread. As an example, in Minneapolis there is a Central School Health Council composed of representatives from the community as well as from the schools. This Council consists of 40 to 50 members and the members come from parent teachers association, welfare agencies, civil defense, community chest, etc., together with school and public health administrators and board of education. As is proper, several physicians are in this group. Besides this, there is a medical advisory committee appointed by the County Medical Society at the request of the Superintendent of Schools. Both of these groups have stated meetings and they are finding, as we always do, that personal acquaintance increases understanding and respect on both sides. At these meetings is considered not only the health of the school child but, as an essential factor in that, the health of the school staff, teacher, janitor, clerk, bus driver, and all the others who come into contact with the child.

At this time of year, requests will be coming to physicians throughout the state for advise and co-operation, for physical examinations, for aid in setting up training programs for health, for help to physical education teachers and coaches in prevention of injuries. The Committee on Child Health under Dr. Logan has studied this problem and can be of great help to all of us. We should not hesitate to call on them. This committee has also studied juvenile delinquency and has been active in helping to develop the "Teen Age Code." Dr. Proffitt's Committee on Medical Service is actively studying athletic injuries and their care. We hope that all co-operation can be given by physicians so that supervision of health problems, both school and community, will remain where it belongs, with the medical profession.

Horatio R. Sweetser

President, Minnesota State Medical Association

Report on Actions of AMA House of Delegates

Distinguished Service Award Recipient

Dr. Frank Hammond Krusen, professor of physical medicine and rehabilitation at the Mayo Clinic, Rochester, was voted to receive the 1958 Distinguished Service Award of the AMA at the 107th annual meeting of that group held June 23-27 in San Francisco.

The Minnesota physician was named for his outstanding achievement and contributions in the field of physical medicine and rehabilitation.

Special AMA citations to laymen for outstanding service in advancing the ideals of medicine and contributing to public welfare were awarded to Mrs. Charles W. Sewell of Otterbein, Indiana, who has spent forty-five years in rural health work, and Gobind Behari Lal, Ph.D., distinguished science writer and Pulitzer prize winner.

United Mine Workers

Final action on two resolutions adopted in December, 1957, dealing with medicine and the UMWA Welfare and Retirement Fund, were postponed until the final report of the Commission on Medical Care Plans is received at the AMA clinical meeting in Minneapolis in December, 1958.

One of those resolutions, Number 20, declared that "a broad educational program be instituted at once by the American Medical Association to inform the general public, including the beneficiaries of the Fund, concerning the benefits to be derived from preservation of the American right to freedom of choice of physicians and hospitals as well as observance of the 'Guides to Relationships Between State and County Medical Societies and the UMWA Welfare and Retirement Fund' adopted by this House last June." The other resolution, Number 24, called for the appropriate AMA committee or council to engage in conferences with third parties to develop general principles and policies which may be applied to their relationships with members of the medical profession.

The House of Delegates, by a vote of 110 to 72, adopted a floor amendment "that this section of the Reference Committee report be amended to show that our AMA Headquarters Staff is directed, under supervision of the Board of Trustees, to proceed *immediately* with the campaign which was originally ordered at Philadelphia last December, that no further delays will be tolerated, and that the Council on Medical Service be relieved of any further responsibility in this matter."

Social Security Coverage

In considering seven resolutions dealing with the inclusion of self-employed physicians under the Social Security Act, the House disapproved of three which called for polls or a referendum of the AMA membership, one which favored state-by-state participation in Social Security, and two which called for compulsory inclusion on a national basis. Instead, the House adopted a resolution pointing out that "American physicians always have stood on the principle of security through personal initiative," and reaffirming unequivocal opposition to the compulsory inclusion of self-employed physicians in the Social Security system.

On the question of polls, the House expressed the opinion that any poll should be taken on a state-by-state basis and the results transmitted to the AMA delegates from that state.

Voluntary Health Organization

The House adopted the following statement offered in the form of amendments from the floor for dealing with problems that have arisen in the raising and distributing of funds since development of the concept of united community effort:

"1. That the House of Delegates reiterate its commendation and approval of the principal voluntary health agencies.

"2. That it is the firm belief of the American Medical Association that these agencies should be free to conduct their own programs of research, public and professional education and fund raising in their particular spheres of interest.

"3. That the House of Delegates respectfully requests that the American Medical Research Foundation take no action which would endanger the constructive activities of the national voluntary health agencies.

"4. That the Board of Trustees continue actively its studies of these perplexing problems looking forward to their ultimate solution."

Veterans' Medical Care

The House urged Congressional action to restrict hospitalization of veterans at VA hospitals to those with service-connected disabilities. It also recommended that the American Medical Association suggest to the Dean's Committees that they restrict their activities to Veterans Administration hospitals admitting only patients with service-connected disabilities.

The Medicare Program

The House reaffirmed the action taken last year in New York recommending that the decision on type of contract and whether or not a fee schedule is included in future contract negotiations should be left to individual state determination. Also reaffirmed was the Association's basic contention that the Dependent Medical Care Act as enacted by Congress does not require fixed fee schedules; the establishment of such schedules would be more expensive than permitting physicians to

charge their normal fees, and fixed fee schedules would ultimately disrupt the economics of medical practice.

Washington Office

The House adopted a resolution requesting the Board of Trustees to make an immediate survey and re-evaluation of "the functions and effectiveness of the over-all AMA legislative system, including the Washington office, in the light of present-day needs of the government, public and medical profession alike for effective liaison between government and medicine on all matters affecting the public's health and adequate, prompt and accurate transmittal to the full membership of the AMA of information on all current public issues in which the physician has a direct interest."

Medical Aspects of Hypnosis

A Council on Mental Health report on "Medical Use of Hypnosis" was approved by the House, which recommended that it be published in the Journal of the AMA with bibliography attached. The report stated that general practitioners, medical specialists and dentists might find hypnosis valuable as a therapeutic adjunct within the specific field of their professional competence. It stressed, however, that all those who use hypnosis need to be aware of the complex nature of the phenomena involved. Teaching related to hypnosis should be under responsible medical or dental direction, the report emphasized, and should include the indications and limitations for its use.

Over-the-Counter Medications

The House endorsed recommendations by the Public Relations Department that:

The AMA join with other interested groups in setting up an expanded voluntary program, coordinated by the National Better Business Bureau, which will seek to eliminate objectionable advertising of over-the-counter medicines.

The AMA counsel with the National Better Business Bureau in the selection of a physicians' advisory committee.

The established facilities of the AMA, such as the Chemical Laboratory, the offices of the various scientific councils, and the Bureau of Investigation, be made available, so far as is feasible, to aid in the carrying out of this program.

The Public Relations Department continue its liaison work with the various groups involved and assist in the development and operation of this program in any way possible.

The AMA should become a sustaining member of the National Better Business Bureau.

Opening Session

Dr. David B. Allman, retiring AMA president, at the Monday opening session urged every physician to rededicate himself to the service of mankind and every medical society to strengthen its disciplinary system "to prevent the very few from besmirching the vast majority of us." Dr. Gundersen, then president-elect, said the Association is moving ahead in finding the best possible ways to serve both the public and the medical profession, and he declared there is no reason to believe that its influence and impact will not continue to grow in the times ahead.

Inaugural Ceremony

Dr. Gunnar Gundersen, in his Tuesday night inaugural address, called upon the medical profession to accept its full responsibilities in promoting better world health, brotherhood and peace, adding that "the time has come when medical statesmanship must be used to augment the methods of political diplomacy." Dr. Gundersen also presented the Distinguished Service Award to Dr. Krusen and the special layman citations to Mrs. Sewell and Dr. Lal. The Shrine Chanters of Oakland, Calif., provided choral numbers during the program.

Election of Officers

Dr. Louis M. Orr, urologist of Orlando, Fla., was chosen unanimously as president-elect for the coming year. Dr. Orr, who in recent years has been vice speaker of the House of Delegates and chairman of the AMA Committee on Federal Medical Services, will become president of the American Medical Association at the June, 1959, meeting in Atlantic City. He then will succeed Dr. Gunnar Gundersen of La Crosse, Wis., who became the 112th president at the Tuesday night inaugural ceremony in the Rose and Concert Rooms of the Sheraton-Palace Hotel.

Dr. W. Linwood Ball of Richmond, Va., vice president; Dr. E. Vincent Askey of Los Angeles, re-elected speaker, and Dr. Norman A. Welch of Boston, vice speaker, were other officers elected.

Dr. Warren W. Furey of Chicago was elected for a five year term on the Board of Trustees. Dr. Raymond M. McKeown of Coos Bay, Ore., was re-elected for a five year term, and Dr. R. B. Robins of Camden, Ark., was named to fill the unexpired term of Dr. F. J. L. Blasingame. Dr. Leonard W. Larson of Bismarck, North Dakota, was elected chairman of the Board at its organizational meeting.

Meetings and Announcements

MEDICAL MEETINGS

State

Conference on Electrical Techniques in Medicine and Biology, eleventh annual session, Nicollet Hotel, Minneapolis, November 19, 20 and 21, 1958.

Northern Minnesota Medical Association, annual meeting, Detroit Lakes, September 5 and 6, 1958.

NATIONAL

Academy of Psychosomatic Medicine fifth annual meeting, Park Sheraton Hotel, New York City, October 9-11, 1958.

American Association of Medical Assistants, second annual convention, Palmer House, Chicago, Illinois, October 31, November 1 and 2, 1958.

American College of Surgeons, 44th annual Clinical Congress, Chicago, Conrad Hilton Hotel, October 6-10, 1958.

American Rhinologic Society, fourth annual meeting, Palmer House, Chicago, Illinois, October 17-18, 1958.

Fifth Annual Conference of Mental Health Representatives of the State Medical Associations sponsored by the AMA Council on Mental Health, November 21 and 22, 1958, Drake Hotel, Chicago.

Gerontological Society, Inc., Bellevue Stratford Hotel, eleventh annual scientific meeting, Philadelphia, Pennsylvania, November 6, 7, and 8, 1958.

National Society for Crippled Children and Adults, 1958 convention, November 16-20, Statler Hotel, Dallas, Texas.

One-day course in Cardiac Resuscitation, Emory University School of Medicine, Atlanta, Georgia, October 3, 1958. Write Postgraduate Education, Emory University School of Medicine, 69 Butler Street, SE, Atlanta 3, Georgia, for further information.

Second Oklahoma Colloquy on Advances in Medicine, Arthritis and Related Disorders, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma, November 12, 13, 14 and 15, 1958.

Western Surgical Association, annual meeting, Hotel Kahler, Rochester, November 20, 21 and 22, 1958.

INTERNATIONAL

Fifth International Congress on Diseases of the Chest, sponsored by American College of Chest Physicians, Tokyo, Japan, September 7-11, 1958.

Section of Psychopharmacology of the IV. International Congress of Psychotherapy, Barcelona, Spain, September 1-7, 1958.

Third International Congress of Allergy, sponsored by International Association of Allergology and French Allergy, Association, Paris, France, October 19-26, 1958.

REGIONAL AMERICAN COLLEGE OF PHYSICIANS MEETING IS SET

The Midwest Regional Meeting of the American College of Physicians will be held in Milwaukee, Wisconsin, September 27, 1958, at the Milwaukee County Hospital. A scientific program of twenty-two papers of fifteen minutes each has been arranged. A noon luncheon, banquet and entertainment in the evening, as well as a luncheon and entertainment at noon for the ladies, has been scheduled. A cordial invitation has been extended to all physicians, members of the College and nonmembers. There is no registration fee.

POSTGRADUATE COURSES

The Woman's Hospital in New York City is offering two courses in obstetrics, limited to general practitioners. Each course is approved for thirty hours Category I credit by the American Academy of General Practice. The courses are entitled "Ante-partum Care" and "The Conduct of Labor and Delivery," to be given from October 16-30, 1958. Address Mr. Carl P. Wright, Jr., Woman's Hospital, 141 West 109th St., New York 25, New York, for further information.

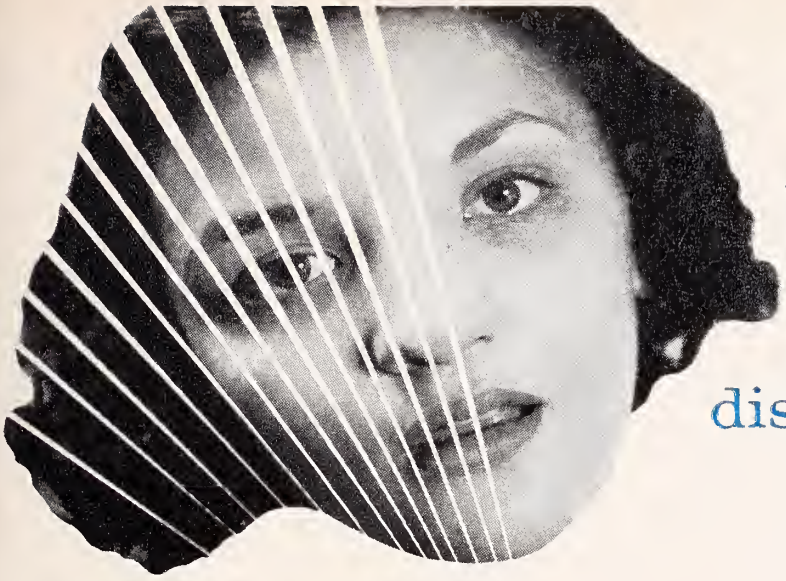
MODEL CONSTITUTIONS NOW AVAILABLE

Copies of a model constitution and by-laws have been prepared and mailed to all officers, councilors and secretaries of component medical societies. The model document has been approved by the legal counsel of the Minnesota State Medical Association. The special committee, chairmanned by Dr. Haddon M. Carryer, Rochester, urges all secretaries to check their own document for possible up-to-date revisions. The committee will also make available to component medical societies charters to those groups who do not have these original documents in their possession.

STATE CHEST PHYSICIANS PLAN WEEKEND DISCUSSIONS

The Minnesota Chapter of the American College of Chest Physicians will hold a weekend of clinical discussions to which physicians and their families are invited to participate, August 30, 31 and September 1, 1958, at Robert's Pine Beach Hotel on Gull Lake near Brainerd. The program will include the symposium on Esophageal disease and will feature Dr. Howard Anderson from the Mayo Clinic and Dr. Robert Priest of Minneapolis, who will discuss the various subjects from the Endoscopist's viewpoint. Another session has been scheduled to include clinical and laboratory experience with the surgical treatment of coronary artery disease. Dr. Joseph Garamella and Dr. Robert Schmidt of Minneapolis will contribute their clinical experience while Dr. John Brainard of Ancker Hospital, St. Paul, will discuss his experiences in the experimental laboratory. Dr. N. K. Jensen of Minneapolis has some film on the problem

(Continued from Page A-34)



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*A Symposium on the Pharmacologic Effects of Dartal on the Liver, Chicago, Searle Research Laboratories, Feb. 7, 1958.

STATE CHEST PHYSICIANS

(Continued from Page 598)

of Pectus Excavatum in Children. Dr. Victor Krueger of Nopeming Sanatorium in Minnesota has some interesting data concerning the treatment of the child with the recently converted Mantoux test that should provide some very interesting discussion. Address inquiries to Robert's Pine Beach Hotel, Brainerd, Minn., or Dr. Philip H. Soucheray, 836 Lowry Medical Arts Building, St. Paul 2, Minn.

REPORT GIVES LATEST CHILDREN'S HEARING LOSS DATA

Hearing Loss in Children, a report prepared by the Committee on Conservation of Hearing, has been mailed to members of the association. The brochure includes many significant advances in the field of preservation and restoration of hearing. The information included in the publication is considered by the committee to be a summary of current opinion concerning management of hearing-handicapped children. Please substitute the current report for the 1954 document in your reference files.

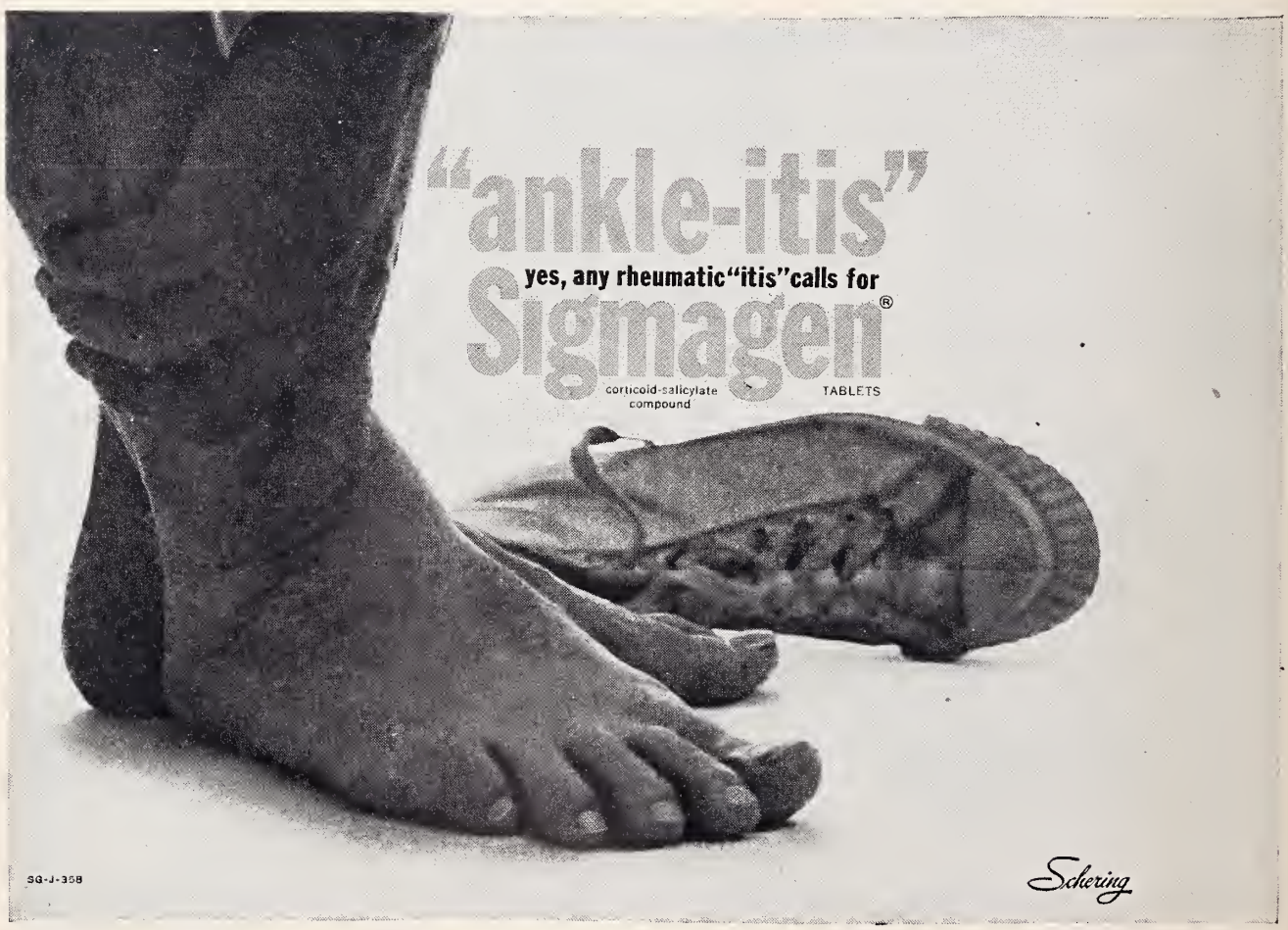
LABORATORY ASSISTANTS AVAILABLE FOR PLACEMENT

Upon satisfactory completion of the Course for Laboratory Assistants of the General Extension Division of the University of Minnesota, twenty-five students will receive certificates on September 18, 1958. The students are trained to do hemoglobin determinations, white blood cell counts, red blood cell counts, normal differential smears and recognition of an abnormal smear, routine urinalysis, titration of gastric acidity, occult blood, BMR tests, EKG tests, blood group typing, and limited blood chemistry determinations (sugar, urea nitrogen, chloride). The students are best qualified to work in a physician's office or to assist a registered M.T. (ASCP) in a hospital or clinical laboratory. Information about the students and the training program may be obtained from Margaret Ohlen, Instructor and Co-ordinator, Medical Laboratory Assistants Program, C205 Mayo Building, University of Minnesota, Minneapolis 14, Minnesota.

FELLOWSHIP FOR WOMEN PHYSICIANS

The Women's Medical Association of the City of New York offers the Mary Putnam Jacobi Fellowship to a graduate woman physician, either American or foreign. This Fellowship will start October 1, 1959, and will amount to $2000, $1000 being available October 1, 1959. The recipient of the Fellowship will be expected to make a report to the committee at the end of the fourth month following which the second $1000 will be awarded subject to the approval of the committee. The Fellowship is given for medical research, clinical investigation or postgraduate study in a special

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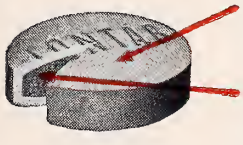


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Special outer shell releases 33 mg. Pyribenzamine hydrochloride within 10 minutes.

Unique core releases approximately 18 mg. Pyribenzamine hydrochloride the 1st hour, approximately 50 mg. from the 2nd to the 12th hour.

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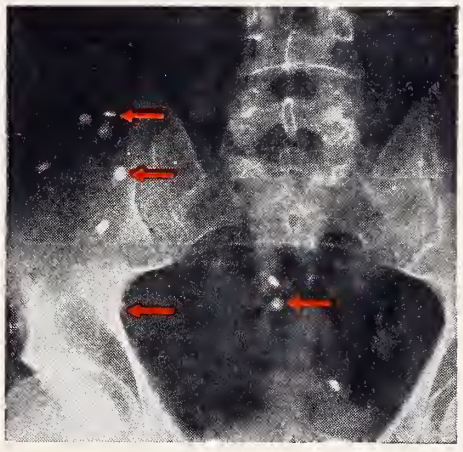
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C I B A SUMMIT, N. J.

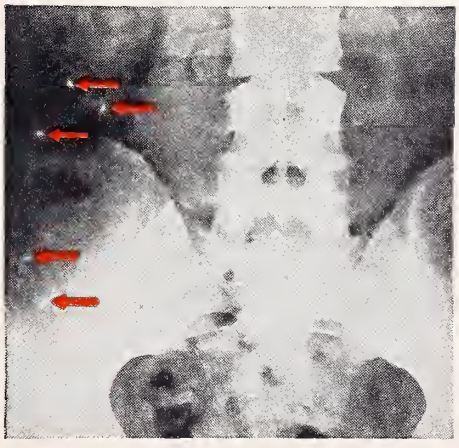
2 hours Lontabs are in the stomach and small bowel. Release of core substance is well under way.



4 hours Lontabs are in the ileum and cecum as core has steadily eroded.



8 hours Lontabs are still visible as substance of core continues to be released.



FELLOWSHIP FOR WOMEN PHYSICIANS

(Continued on Page A-34)

field of medicine. The recipient is expected to devote full time to the Fellowship, but exception may be made by the committee under special circumstances.

Applications for this Fellowship may be obtained from the secretary of the committee† after August 1, 1958, and must be returned before February 1, 1959, with the following information (1) curriculum vitae, (2) a statement from a physician of a recent physical examination, (3) transcripts of her college and medical school records, (4) personal letters of recommendation from two or more physicians under whom she has studied, (5) a statement by the applicant of the problems she proposes to investigate or the study she plans to undertake, (6) a statement from the person under whom she proposes to study of his or her interest in her subject, (7) recent photograph. All the above data must be at hand before the application will be considered.

Successful candidates will be notified not later than May 1, 1959.

†Address Ada Chree Reid, M.D., Secretary,
118 Riverside Drive,
New York 24, New York.

CONTINUATION COURSES

Medical Continuation Courses to be presented at the Center for Continuation Study, University of Minnesota, include:

September 23-25—Pediatrics for Pediatricians
October 6-8—Obstetrics for Specialists
October 23-25—Dermatology for General Physicians
November 3-8—Pediatric Radiology for Radiologists
November 17-19—Fractures for General Physicians
November 17-22—Neurology and Neurosurgery for General Physicians
November 20-22—Physical Medicine for Specialists

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The thirty-eighth annual session of the Northern Minnesota Medical Association will be held in Detroit Lakes, Minnesota, Friday and Saturday, September 5 and 6, 1958.

Registration of Association members, Friday morning, and all Scientific Sessions will be at the Armory. Registration for the Ladies Auxiliary, Friday noon, will be at the Detroit Lakes Country Club.

Program

Friday, September 5, 1958

Morning Session—10:00 A.M.

Arnold Larson, M.D., Presiding

"Evaluation of the Transaminase Test."
A. H. Wells, M.D., Duluth

"Current Recommendations on Immunization."
Henry H. Reed, M.D., Duluth

"Management of the Severe Nose Bleed."
O. E. Hallberg, M.D., Rochester

"Threatened and Habitual Abortion."
John S. Gillam, M.D., Fargo, North Dakota

Business Meeting—12:40 P.M.

Luncheon—1:00 P.M.

Armory—Dining Room

Hosts: Clay-Becker Medical Society

Afternoon Session—2:00 P.M.

Ralph Eckman, M.D., Presiding

Panel: "Non-Malignant Conditions of the Gall-Bladder and Pancreas."
Lyle Hay, M.D., Surgeon's Viewpoint
E. B. Flink, M.D., Internist's Viewpoint

"Evaluation of Acute Head Injuries"
Lee A. Christoferson, M.D., Fargo

Panel: "Staphylococci and Gran-Negative Septicemia"

1. Incidence, Distribution and Types of Hospital Staphylococcal Infections.
   Wendell H. Hall, M.D., Minneapolis
2. Modes of Spread and Prevention of Hospital Staphylococcal Infections with Emphasis on Surgical Aspects.
   Claude Hitchcock, M.D., Minneapolis
3. Specific Therapy and Problems of Resistance in Staphylococcal Infections.
   Joseph Geraci, M.D., Rochester

Annual Banquet—7:00 P.M.

Detroit Lakes Country Club

Presiding—Arnold Larson, M.D., President, Northern Minnesota Medical Association

Remarks—Horatio B. Sweetser, M.D., President, Minnesota State Medical Association

Address: "Believe It or Not in Medicine"—E. M. Hammes, Sr., M.D., St. Paul

Saturday, September 6, 1958

Morning Session—9:00 A.M.

Clinico—Roentgen-Pathological Conference.
Led by H. G. Moehring, M.D., assisted by those presenting material and cases outlined. This conference is strictly informal. Free general discussion is encouraged and appreciated.

Afternoon Activity—1:30 P.M.

Golf Tournament—Detroit Lakes Country Club

Woman's Auxiliary

RAMSEY COUNTY AUXILIARY STYLE SHOW

"Saison de Couleur" will be the theme of the Fashion Show which the Woman's Auxiliary to the Ramsey County Medical Society will present on Wednesday, September 17, at a one o'clock luncheon at the St. Paul Hotel.

Mrs. Walter A. Carley is general chairman, with Mrs. Albert Hayes in charge of decorations, Mrs. Francis Lynch, hostesses, and Mrs. Louis C. Lick, Mrs. Clayton Williams, and Mrs. John Galligan, reservations and tickets.

The event promises to be a gala one, with Field-Schlick, Inc., showing the latest colors and styles, modeled by members of the Auxiliary and professional models.

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—the remarkably efficient skeletal muscle relaxant, unique in chemical formulation, and outstanding for sustained action and relative freedom from adverse side effects.

PUBLISHED REFERENCES: 1. Carpenter, E. B.: Southern Medical Journal 51:627, 1958. 2. Forsyth, H. F.: J.A.M.A. 167:163, 1958. 3. Little, J. M., and Truitt, E. B., Jr.: J. Pharm. & Exper. Therap. 119:161, 1957. 4. Morgan, A. M., Truitt, E. B., Jr., and Little, J. M.: J. Am. Pharm. Assn., Sci. Ed. 46:374, 1957. 5. O'Doherty, D. S., and Shields, C. D.: J.A.M.A. 167:160, 1958. 6. Park, H. W.: J.A.M.A. 167:168, 1958. 7. Truitt, E. B., Jr., and Patterson, R. B., Proc. Soc. Exper. Bio. & Med. 95:422, 1957. 8. Truitt, E. B., Jr., Patterson, R. B., Morgan, A. M., and Little, J. M.: J. Pharm. & Exper. Therap. 119:189, 1957.

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Summary of four new published clinical studies:

Robaxin Beneficial in 95.6% of Cases of Acute Skeletal Muscle Spasm[1, 2, 5, 6]

CONDITION	NO. PATIENTS	RESPONSE			
STUDY 1[1]		"marked"	moderate	slight	none
Skeletal muscle spasm secondary to acute trauma	33	26	6	1	—
STUDY 2[2]		"pronounced"			
Herniated disc	39	25	13	—	1
Ligamentous strains	8	4	4	—	—
Torticollis	3	3	—	—	—
Whiplash injury	3	2	1	—	—
Contusions, fractures, and muscle soreness due to accidents	5	3	2	—	—
STUDY 3[5]		"excellent"			
Herniated disc	8	6	2	—	—
Acute fibromyositis	8	8	—	—	—
Torticollis	1	—	—	1	—
STUDY 4[6]		"significant"			
Pyramidal tract and acute myalgic disorders	30	27	—	2	1
TOTALS	138	104 (75.3%)	28 (20.3%)	4	2

THE JOURNAL of the American Medical Association

"In the author's clinical experience, methocarbamol has afforded greater relief of muscle spasm and pain for a longer period of time without undesirable side effects or toxic reactions than any other commonly used relaxants . . ."[2]

THE JOURNAL of the American Medical Association

"An excellent result, following methocarbamol administration, was obtained in all patients with acute skeletal muscle spasm."[5]

THE JOURNAL of the American Medical Association

"In no instance was there any significant reduction in voluntary strength or intensity of simple reflexes."[6]

Southern Medical Journal

"This study has demonstrated that methocarbamol (Robaxin) is a superior skeletal muscle relaxant in acute orthopedic conditions."[1]

Communications

Dear Doctor Wells:

The enclosed letter and résumé of the principles followed in legal abortions in Sweden have been received from the Royal Consulate of Sweden in Minneapolis. You may wish to publish this material in MINNESOTA MEDICINE for the information of Minnesota physicians.

Respectfully,
R. N. BARR, M.D.
Secretary and Executive Officer
Minnesota Department of Health

Minneapolis, Minnesota
April 22, 1958

Dear Sirs:

Inquiries from abroad are often received by Swedish authorities regarding the possibilities of obtaining a legal abortion in Sweden. As these are very small, it has been found desirable that the situation should be announced abroad.

Enclosed sheet contains a short résumé of the principles followed in Sweden. I should be much obliged if, through your good offices, the contents thereof could be made known to medical circles or other suitable quarters in the State of Minnesota.

Yours very truly,
GÖSTA AF PETERSENS
Consul General

This Section is for you to voice your convictions, comments, and queries on all subjects political, economic, historic, humorous, scientific or otherwise, to many physicians. Writings not sufficiently formal and too brief for an editorial or a scientific manuscript are requested. Clinical and research observations, no matter how brief, similar to those in *The Lancet* (London), are particularly encouraged.

Résumé of Principles

The health authorities in Sweden point out that the chances for alien women to obtain legal abortion in Sweden are very small. Permission for abortion will be granted an alien woman in such cases only, where the giving of birth should seriously threaten her life and health on account of her being ill or incapacitated. In all other cases, a thorough examination is required regarding the applicant and her personal circumstances. Such an examination is to be performed by the curator of a Swedish consultative bureau for questions pertaining to abortions. A trustworthy examination of this kind can be made as regards such persons only, who have resided in Sweden for a longer period of time.

* * *

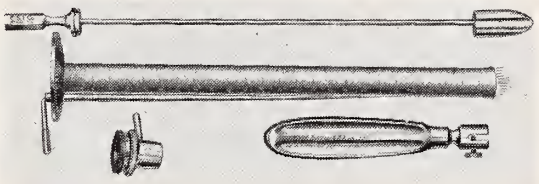
Dear Sir:

In the April, 1940, issue of MINNESOTA MEDICINE, Dr. L. K. Buzzelle of Minneapolis and myself reported the case of a recurring myxosarcoma of the right inguinal region in a white male who was ten years old. On December 19, 1938, a large myxosarcoma was removed from the region of the right saphenous vein at the fossa ovalis. The tumor measured 10 by 12 cms. in diameter. Dr. E. T. Bell reported that this was a typical myxosarcoma. In March, 1939, a 2 cm. myxosarcoma was removed from the inguinal scar. According to Dr. Buzzelle who has recently seen this boy, he is now married and is raising a family and has had no more recurrences of this highly malignant tumor.

R. B. TUDOR, M.D.
Quain & Ramstad Clinic

Bismarck, North Dakota
July 16, 1958

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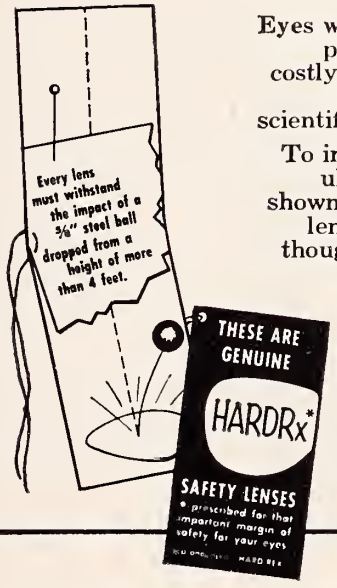
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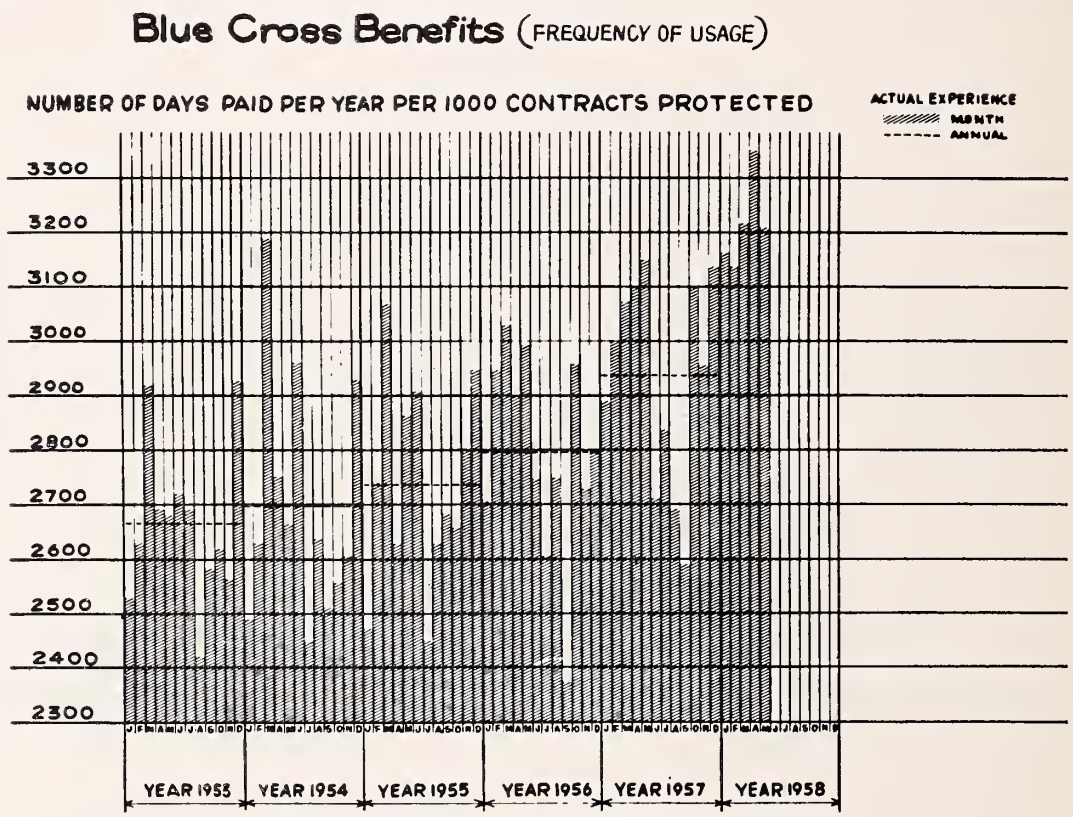
The Blue Shield Plans show a total enrollment of 41,443,640 as of March 31, 1958 according to national enrollment facts recently released. This figure includes enrollment in 72 Plans in operation in 43 of the 48 states, the District of Columbia, eight Canadian Provinces, and the territories of Puerto Rico and Hawaii. The 41,443,640 participant subscribers enrolled at the end of the first quarter of 1958 represent approximately 23.5 per cent of the combined populations of the areas served by the Plans.

Enrollment in six Plans, as of March 31, exceeded 40 per cent of the populations served by them, including Connecticut, Delaware, Massachusetts, Michigan, New York, and the District of Columbia. Accordingly, the number of Minnesota Blue Shield participant subscribers equalled over 26 per cent of the State's estimated population.

At the close of the first quarter of 1958 enrollment in each of ten Plans exceeded one million subscribers. Among those Plans with 500,000 to 1,000,000 subscribers, Minnesota Blue Shield was the largest Plan with 871,874 participant subscribers. Thus, Minnesota Blue Shield ranked eleventh in enrollment among all Blue Shield Plans.

As of May 31, 1958, Minnesota Blue Shield participant subscribers numbered 875,079.

The accompanying graph shows frequency of usage of Blue Cross benefits by subscribers since 1953 including the first five months of 1958.



It is interesting to note that frequency of hospitalization of Blue Cross subscribers for the month of May, 1958, has continued at the unprecedented high experienced in the previous seven months into 1957.

The incidence rate experienced from October, 1957, through May, 1958, is consistently high in relation to previous years.

Compared with the first five months of 1957, the frequency of subscriber usage of Blue Cross benefits in terms of days paid per year per 1,000 contracts has increased 5.7 per cent.

In dollar amounts, Blue Cross payments for hospital care used by subscribers during the first this period is equivalent to one-half day of hospital five months of 1958, exceeded $14,140,000. The total of 570,274 days of hospital care paid during care provided for every man, woman, and child enrolled in Minnesota Blue Cross.

In Memoriam

ALVIN M. NIELSEN

Dr. Alvin M. Nielsen, Northfield physician, died June 23, 1958, of a coronary attack. He was forty-nine years of age.

Dr. Nielsen was born April 4, 1909, at Jacksonville, Iowa. After being graduated from the University of Minnesota, obtaining his medical degree in 1939, he interned at St. Joseph's Hospital, St. Paul, in 1940.

He then began his medical practice in Northfield, being here two years before he entered Navy medical service. He received training at Mare Island and Camp Pendleton, Calif. A lieutenant, he left for overseas in April, 1943. After receiving jungle training in Samoa, he joined the Second Marine Division in New Zealand, then participated in three major invasions in the South Pacific—Tarawa, Saipan and Tinian. He also served on New Caledonia.

For his cool courage under fire and his efficiency in ministering to and evacuating the wounded from Saipan, Tinian, Tarawa and other bloody Pacific battlefields, he was awarded the Legion of Merit, one of the highest Navy decorations.

During his South Pacific experiences, he was promoted to battalion surgeon and directed the work of his aid station. He was struck by shrapnel slivers while at work on wounded Marines on Saipan, hence was awarded the Purple Heart. He also held the Presidential Unit Citation awarded to the Second Marine division.

After returning to the United States in the fall of 1944, Lieutenant Nielsen was stationed at the Naval Air Technical Training Center in Chicago. He returned to his Northfield practice in November, 1945.

The doctor was a member of the Exchange Club, Rainbow Saddle Club, Northfield Post No. 84, American Legion, Eugene H. Truax Post No. 4393, V.F.W., the Rice County Medical Society, Phi Rho Sigma Medical Society, Minnesota State Medical Association and the American Medical Association. For some time, he was chairman of the medical phase of Northfield's Civil Defense program. He was a member of St. John's Lutheran church.

He is survived by his wife, Ruby; four children, Gayle, Adrian, Margie, and Timothy; one sister, Mrs. J. C. Hanson of Latimer, Iowa; three brothers, Dr. R. F. Nielsen and Dr. T. G. Nielsen of Cedar Falls, Iowa, and Garfield Nielsen of Los Angeles, Calif.

There is nothing really evil in the term. In Spanish, propaganda means advertising; in religion, it means spreading the faith; in government, it means trying to make ourselves understood abroad. The word came into disrepute when abused by Adolf Hitler's propaganda chief, Joseph Goebbels, and came to mean the big lie.—Georve V. Allen, director, U. S. Information Agency.



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General Interest

Dr. J. B. Redford, fellow in Physical Medicine and Rehabilitation in the Mayo Foundation, has received a scholarship awarded by the National Society for Crippled Children and Adults (the Easter Seal Society) and financed by Alpha Chi Omega, national women's fraternity.

* * *

Dr. C. Walton Lillehei has been named the recipient of the American Therapeutic Society's annual Oscar B. Hunter award for his work in open heart surgery at the University of Minnesota. The award was made in conjunction with the society's annual meeting, held prior to the AMA convention in San Francisco.

* * *

Dr. Anthony J. Bianco, Jr., a member of the Section of Orthopedic Surgery of the Mayo Clinic, received the degree of master of science in orthopedic surgery from the University of Minnesota on June 14, 1958.

* * *

Dr. William F. Skaife, formerly a practicing physician in Little Falls, is now associated with Dr. S. W. Giere of Benson.

* * *

Dr. W. O. Finkelnburg has been elected president of the Winona General Hospital medical staff. He replaced Dr. L. I. Younger. Officers re-elected were: Dr. C. W. Rogers, vice president; Dr. G. L. Loomis, secretary; and Dr. S. O. Hughes, chief of medicine. Dr. P. A. Mattison was elected to succeed Dr. Finkelnburg as chief of surgery and Dr. L. W. Wilson replaces Dr. John A. Tweedy as chief of obstetrics and gynecology.

* * *

The Chippewa County-Montevideo Hospital and the local medical society announce that Dr. Rolf Andreassen of Minneapolis, a specialist in heart disorders, is now a member of the consulting medical staff.

* * *

A St. Paul physician, Dr. George Earl, one of the founders of Midway Hospital, is now president emeritus of the Association of American Baptist Homes and Hospitals. Dr. Earl, founder and first president of the group, was named president emeritus at a meeting held in connection with the American Baptist convention in Cincinnati.

* * *

Dr. John R. McDonald, head of a section of surgical pathology in the Mayo Clinic, and professor of pathology in the Mayo Foundation, left Rochester July 1 to become director of pathology at the Harper Hospital in Detroit, Michigan. He has been a member of the staff of the Mayo Clinic since 1937.

* * *

Dr. G. T. Midboe of St. Paul has taken over the medical practice of Dr. N. M. Mensheha, Forest Lake. Dr. Mensheha, who has served this area for the past six years, has accepted a three-year residence fellowship in obstetrics and gynecology in the University of Minnesota's school of postgraduate medicine. Dr. Lloyd Wood, who has been associated with Dr. Mensheha, left Forest Lake in April to join the Olmsted Clinic in Rochester.

* * *

Dr. William F. Mazzitello, assistant professor of medicine at the University of Minnesota and director of post-graduate medical teaching at Ancker Hospital, was a recent noon luncheon speaker at a meeting of the Business and Professional Men's Association. His topic was "Recent Advances in Diagnosis and Treatment of Heart Diseases."

* * *

Dr. J. Bellomo, radiologist, formerly of St. Paul, has become associated with hospitals in Fairmont and Lakefield.

* * *

Nearly 100 physicians, medical specialists, and dentists will locate in the new Southdale Medical Building, officially dedicated June 25. Located at 66th and South France Avenue, Minneapolis, direct from the Southdale Shopping Center, the medical building is on a 2.6-acre site. All medical and dental tenants must be members of the Hennepin County Medical Society or the Minneapolis District Dental Society. The directory list of tenants for the building includes:

Dermatologists: Charles J. Balogh, Carl W. Laymon.

General Practitioners: Kristofer Hagen, Kenneth V. Hodges.

Internists: E. F. Englund, R. J. Frey, W. L. Hoseth, P. T. Lowry.

Neurologists: Harris G. Bernhisel, Harold H. Noran, Joseph A. Resch, Robert C. Stolt.

Obstetricians-Gynecologists: Russell N. Frys, Erling T. Hauge, E. William Haywa, Edgar G. Ingalls, Loren J. Jacobson, Donald M. Larson, Paul M. Larson, Roger C. Larson, John B. Maunder, Mancel T. Mitchell, John T. Moehn, Oliver H. Peterson, Jr., Sheldon C. Reed, Owen F. Robbins, Morris S. Rothnem, William B. Stromme, Robert M. Wagner, Nora Winther.

Oculists: L. D. Harris, F. M. Walsh.

Ophthalmologists: Malcolm A. McCannel, Matthew L. Namikas.

Orthopedic Surgery: Edward T. Evans, Paul O. Gustafson, Richard H. Jones, Richard E. Reiley, Frederick G. Rosendahl.

Pathologists: C. W. Freeman, E. A. Hanske.

Pediatricians: H. Agustsson, Irvin H. Moore, D. M. Olson, A. J. Schroeder, Theodore S. Smith, William S. Wright.

Psychiatrists: Robert S. Clark, Donald R. Daggett, Clifford O. Erickson, James T. Garvey, Charles Haberle, Richard D. Kogl, Harold H. Noran, Jennings C. L. Peteler, John J. Regan.

Psychologists: Robert Wirt, Anne Wirt, Sherman Nelson.

Radiologists: F. J. Anderson, O. J. Baggenstoss, C. O. Hansen, M. B. Hanson, R. M. Iverson, R. S. Johnson, R. E. Nord, S. C. Von Drashek.

Surgeons: Orley W. Foster, Lawrence M. Larson, Virgil J. P. Lundquist, Stanley R. Maxeiner, S. R. Maxeiner, Jr.

* * *

Dr. R. V. Hodapp, a practicing physician in Willmar, has left that city to begin a two-year residency in pediatric training at the University of Minnesota School of Medicine.

* * *

Dr. John M. Berkman, senior consultant in medicine at the Mayo Clinic, discussed highlights in the life of his grandfather, **Dr. W. W. Mayo**, at a program at Le Sueur recently. The event was a kickoff dinner for a fund drive to furnish equipment for the Minnesota Valley Memorial Hospital to be constructed at Le Sueur. Dr. W. W. Mayo, father of **Drs. W. J.** and **C. H. Mayo**, lived at Le Sueur a number of years before moving to Rochester. Dr. Berkman's mother was a sister of the Mayo brothers.

* * *

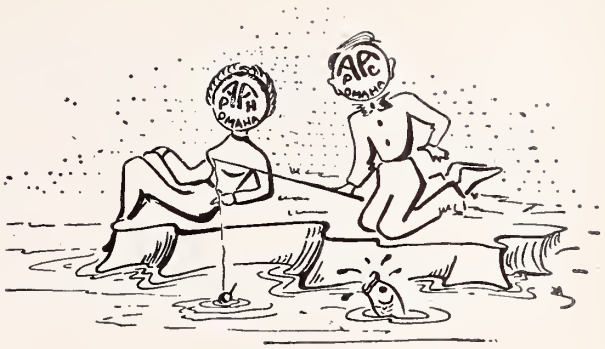
Dr. John M. Waugh, staff member of the Mayo Clinic, has been elected to the Commission on Ecumenical Mission and Relations of the new United Presbyterian Church in the United States.

* * *

Appointment of **Dr. Robert B. Howard** as dean of the University of Minnesota College of Medical Sciences has been announced by Dr. J. L. Morrill, University president. Dr. Howard, associate dean of the college since last fall, succeeds **Dr. Harold S. Diehl** who retired June 30 after holding the deanship since 1935. The new dean has been in charge of the college since Dr. Diehl took a leave of absence last fall to accept appointment as senior vice president of the American Cancer Society.

* * *

Dr. Henry W. Meyerding, of Rochester, will be installed as president of the International College of Surgeons at its meeting in Chicago, September 19, 1958. He will succeed Prof. Dr. Carlos Gama of São Paulo, Brazil.



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Dr. Raymond L. Page, after practicing in St. Charles, Minnesota, for thirty-one years, has accepted a position on the staff of the Student Health Service at the University of Minnesota to start September 15, 1958. Through the encouragement of Dr. Page, St. Charles now has a medical facility to accommodate two physicians. His successors in the community are Dr. Dale Hawk and Dr. Samuel M. Hutchinson, both formerly of Ohio.

* * *

Dr. John F. Briggs, St. Paul, was elected chairman of the Board of Regents at the 24th Annual Meeting of the American College of Chest Physicians held at the Fairmont Hotel, San Francisco, June 18-22, 1958. The following physicians from Minnesota were awarded Certificates of Fellowship in the American College of Chest Physicians: **Drs. Charles R. Drake,** Minneapolis, **Joseph E. Geraci** and **Giles A. Koelsche,** Rochester.

* * *

Dr. William Feigal, Thief River Falls urologist for the past ten years, has become associated with the Lakeside Clinic in Fairmont.

* * *

Dr. Harold C. Halverson, a native of Dell Rapids, South Dakota, has become associated with **Dr. D. M. Odland** of Luverne in the practice of medicine.

* * *

Dr. S. H. Mullen, formerly of Fort Yates, North Dakota, has joined **Drs. C. H. Holmstrom** and **E. E. Pumala** in the Warren Clinic at Warren.

* * *

Dr. George C. Bingham has become associated with **Dr. C. R. Heinzerling** of Chaska.

* * *

Dr. Alan L. Goldstein of Minneapolis, a graduate of the University of Minnesota, who interned at Toledo, Ohio, has taken over the practice of **Dr. S. D. Wolstan** in Minneota.

* * *

Dr. Milton Abrahamson, Minneapolis, announces the association of **Dr. Robert K. Nolan** in the practice of obstetrics, gynecology and infertility.

* * *

Four St. Louis Park Medical Center staff members have recently been promoted at the University of Minnesota. President James L. Morrill announced the following promotions: **Dr. George W. Lund** to clinical assistant professor in the department of pediatrics; **Dr. William R. Fifer** to clinical assistant professor of medicine. (Dr. Fifer was made director of the chest clinic at the University Hospitals last fall to succeed **Dr. J. Arthur Myers,** long-time head of the clinic); **Dr. Robert Green** and **Dr. John La Bree** have been promoted to the rank of clinical associate professor in the department of medicine; **Dr. Walter Indeck** has been appointed chief of the orthopedic service at Mount Sinai Hospital.

* * *

About seventy-five guests attended the dinner recently honoring the seventeen members of the twenty-eighth class of dietetic interns who have completed a year's training at St. Mary's Hospital. **Dr. Edward H. Rynearson,** chairman of Sections of Metabolic Diseases at the Mayo Clinic, was the speaker, choosing as his topic,

"Following a 1,000 Calorie Diet While Traveling in Europe."

* * *

Dr. Henry A. Korda and **Dr. Homer J. Carlson** announce the association of **Dr. Ross Halliday** in the practice of medicine and surgery in the Korda Clinic at Pelican Rapids.

* * *

Dr. Edward A. Banner of the Mayo Clinic, Rochester, was recently elected governor of Rotary International's southern district of Minnesota.

* * *

Dr. Howard P. Rome, head of the section on psychiatry of the Mayo Clinic, has been elected vice chairman of the Veterans Administration's special medical advisory group, it has been announced by Rep. Albert H. Quie.

* * *

Dr. John F. Briggs, St. Paul internist and chairman of the Minnesota Heart Association's Professional Education Committee, was scheduled to address the United Kingdom Chest conference and British Tuberculosis Association meeting, July 2.

* * *

Dr. Karl W. Anderson, Wayzata, medical director of Northwestern National Life Insurance Co., was elected president of the Minnesota Heart Association for 1958-1959.

* * *

Dr. William C. Bernstein, clinical associate professor of surgery at University of Minnesota Medical School, has been appointed director of the division of proctology in the surgery department. Dr. Bernstein is chief of the proctology departments at Veterans Hospital, Minneapolis, and Ancker Hospital, St. Paul. He succeeds **Dr. Walter A. Fansler** who becomes the university's director emeritus July 1.

* * *

Dr. George B. Martin was recently elected president of the medical staff of Northwestern Hospital in Thief River Falls. He succeeds **Dr. H. P. Wendt,** who served as president during the past year. Other officers named include: **Dr. K. L. Stensgaard,** vice president; **Dr. George Van Rooy,** secretary; and Dr. Wendt, chairman of the advisory committee.

* * *

Dr. Donald C. Balfour, emeritus director of the Mayo Foundation and emeritus professor of surgery in the Mayo Foundation, on June 25 was elected an honorary foreign member of the Academy of Surgery of France, it has been announced by Dr. Sylvain Blondin of Paris, secretary-general of the academy. Dr. Balfour in 1949 was elected an associate foreign member of the academy. **Dr. William J. Mayo** was elected an associate foreign member of the Academy of Surgery of France in 1924, and **Dr. Charles H. Mayo** was given the same membership in 1932.

* * *

Dr. Mary E. Giffin, a former consultant in psychiatry in the Mayo Clinic, will become medical director of the North Shore Mental Health Clinic at Highland Park, Illinois, September 1.

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Dr. Byron H. Armstrong, Hopkins, recently won a search for talent semi-final contest held in the Lake Harriet band shell. Dr. Armstrong is a baritone soloist.

* * *

Jack O. Kirkham, Manager, Oxboro Clinic, 9820 Lyndale Ave. S., Minneapolis, has announced the new association of three specialists with that group: **Dr. Mitchell Pincus,** obstetrician-gynecologist, **Dr. Edward A. Johnson,** internal medicine, and **Dr. Byron H. Armstrong** who sees dermatological patients two mornings each week.

* * *

Dr. John Peterson of Duluth has been named a member of the Committee of Ophthalmology of the Minnesota State Medical Association. He succeeds **Dr. Frank N. Knapp,** also of Duluth, who recently asked to be relieved of his duties.

* * *

Dr. Emerson A. Moffitt, a member of the Section of Anesthesiology of the Mayo Clinic, received the degree of master of science in anesthesiology from the University of Minnesota on July 7, 1958. Dr. Moffitt has completed a fellowship in anesthesiology at the Mayo Foundation, Rochester, Minnesota, which is a part of the Graduate School of the University of Minnesota.



"YOUR HUSBAND BROUGHT SOMETHING TO CHEER YOU UP!"

Dr. Gunard A. Nelson, who has been a fellow in obstetrics and gynecology in the Mayo Foundation in Rochester, Minnesota, has left that city and will be located in Minneapolis, Minnesota.

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(*Name of university and results of clinical tests sent upon written request.)

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Milk protein	2.60%
Milk sugar (lactose)	4.20%
Dextrins, Glucose, Maltose	2.10%
Milk minerals	.62%
Calcium	850 mg. per qt.
Phosphorus	560 mg. per qt.
Iron	5.6 mg. per qt.
Water	88.0%

VITAMIN CONTENT

	Per Qt.
Vitamin A (U.S.P. units)	3000
Vitamin D (U.S.P. units)	800
Vitamin C (ascorbic acid)	100 mg.
Niacinamide	8 mg.
Riboflavin (vitamin B_2)	1.2 mg.
Thiamin (vitamin B_1)	.8 mg.
Pyridoxine (vitamin B_6)	.4 mg.



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Minnesota State Medical Association

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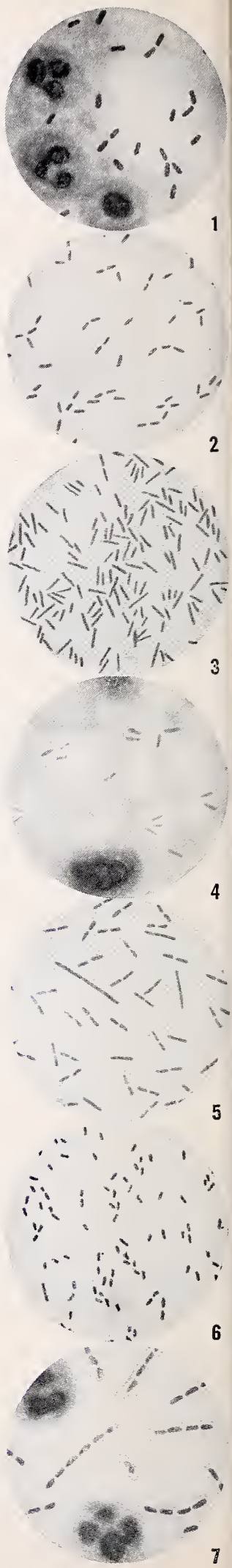
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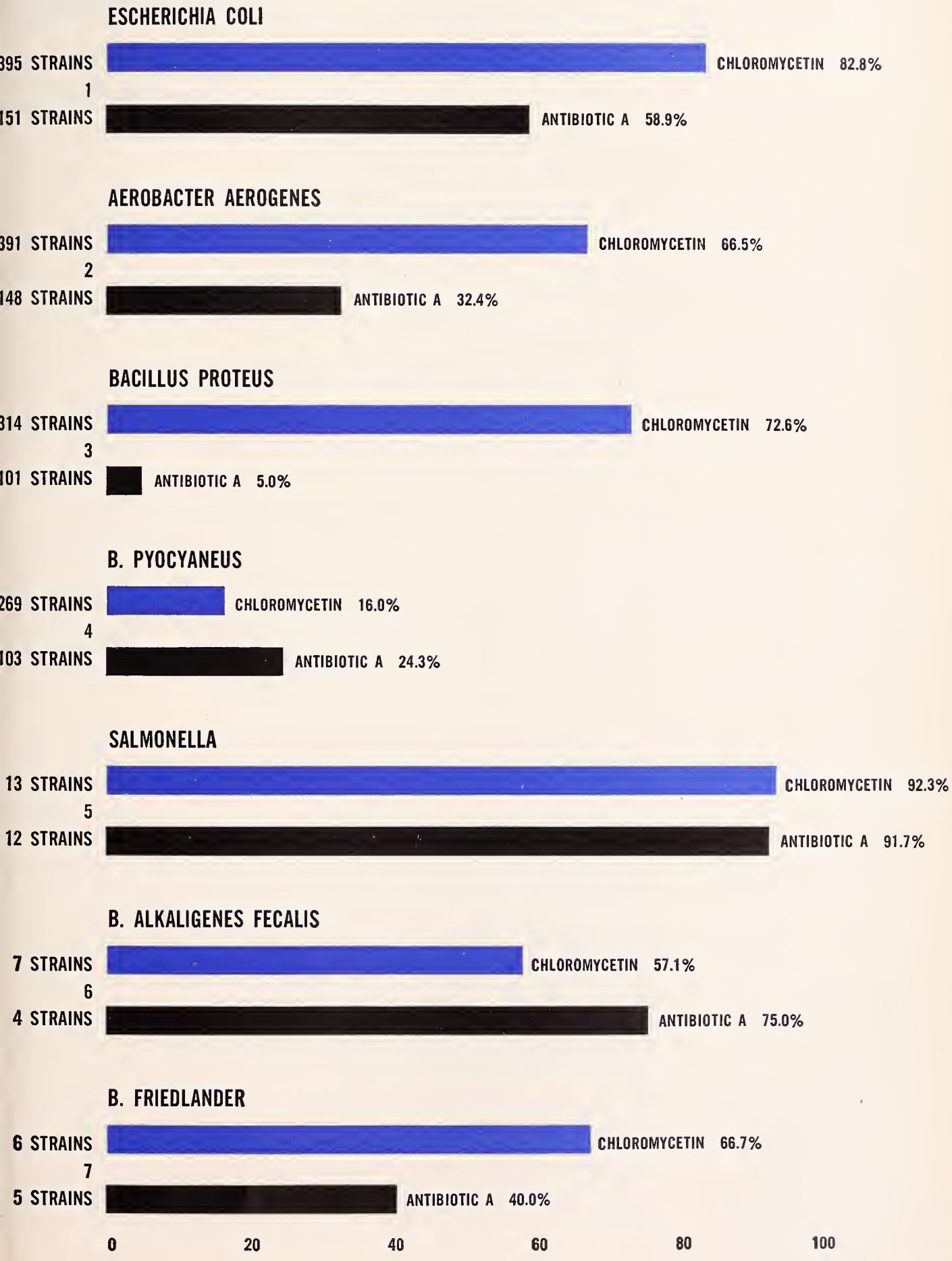
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*Adapted from Schneierson.[1]

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Original Contributions

Pathogenesis of Acute Pancreatitis

ARCHIE H. BAGGENSTOSS, M.D.
Rochester, Minnesota

PRESENT knowledge regarding the pathogenesis of acute pancreatitis has been derived from clinical and pathologic observations of patients and from experimental methods. It is not worth while, nor is it my purpose, to extol the virtues of one over the other. Each method has its own advantages and disadvantages. Clinical and pathologic observation of nature's experiments can always be criticized because of the lack of controls. Experimental investigation, on the other hand, is hampered because may of the sequences observed in human beings cannot be duplicated in the laboratory. Both types of investigation are necessary if a thorough understanding of this mysterious disease is to be gained. Nothing is better for the experimentalist than a broad experience in the clinical and pathologic manifestations of pancreatitis, and for the clinician or pathologist nothing is better than the use of controlled experiments to broaden concepts and stimulate imagination.

Experimental Pancreatitis

Acute pancreatitis has been produced experimentally by a wide variety of methods. Among the methods used are the injection of bile,[1] trypsin[2] and other substances[3] into the pancreatic ducts; blockage of the ducts associated with stimulation of pancreatic secretion;[3-5] obstruction of ducts with stimulation of secretion and interference with blood supply;[6] use of high fat, low protein diets;[7,8] administration of ethionine[9,10] or mecholyl;[11] stimulation of the left splanchnic nerve;[12] and administration of large doses of cortisone.[13]

Thal and Brackney[14] have been able to produce fulminating hemorrhagic pancreatitis in rabbits and goats by introducing meningococcic or Escherichia coli endotoxin into the pancreatic duct at pressures well below those required to produce ductal rupture and, subsequently, inducing the Shwartzman phenomenon by intravenous injection of the same toxin. In control experiments in which the intravenously administered provocative dose was omitted, pancreatic necrosis failed to occur in all cases. Histologic studies uniformly showed capillary and venular hyalin thrombosis. These ingenious experiments refocus attention on the importance of infection in pancreatitis and will be referred to later.

A few years ago Block, Wakim and I[15] wished to re-examine certain factors which are involved in the experimental production of pancreatitis. We were particularly concerned whether a common channel between the common bile and pancreatic ducts is important in the pathogenesis of acute pancreatitis and whether in certain cases acute pancreatitis might not be solely the result of interference with blood supply. We used the rat for these studies for two reasons:

1. Anatomically the external secretion of the pancreas enters into the common duct by way of many small ducts, thus permitting study of the theory of the common channel as an etiologic factor.

2. The changes in the pancreas of the rat after occlusion of the pancreatic duct appeared to be more extensive than in other species, as, for example, the dog.

By occluding the common bile duct at the duodenum it was possible to produce a common channel. By ligating at the hilus of the liver, bile

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Read at the Continuation Course on Emergency Surgery for General Physicians at the University of Minnesota, Minneapolis, Minnesota, January 30 to February 1, 1958.

Dr. Baggenstoss is in the Section of Pathologic Anatomy, Mayo Clinic and Mayo Foundation.

The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

could be excluded from the common duct and ligation at the duodenum would test the effect of obstruction without a common channel. The

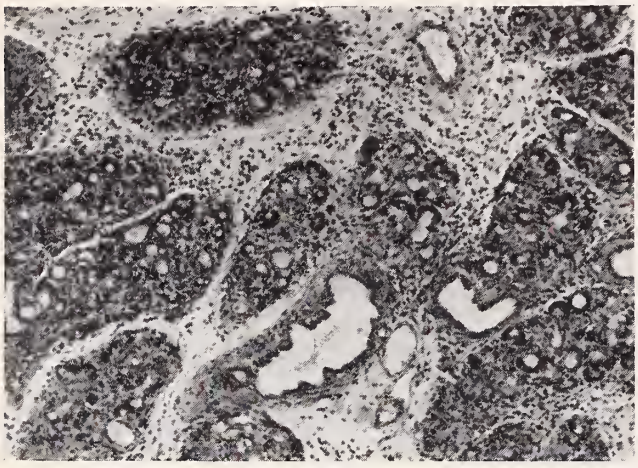


Fig. 1. Acute interstitial pancreatitis in the rat (partial obstruction of ducts). Note dilatation of ducts (hematoxylin and eosin; reduced from x100).

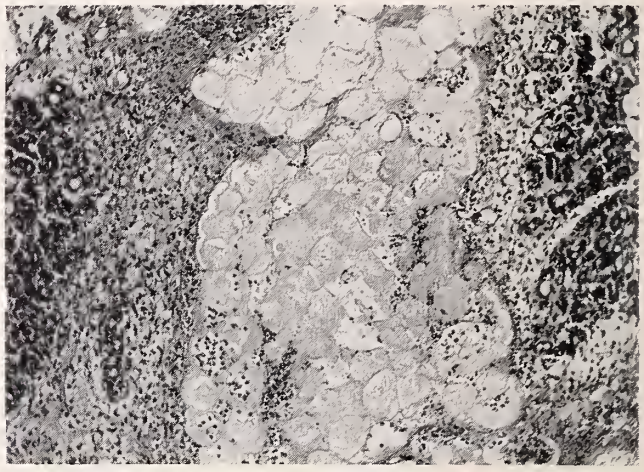


Fig. 2. Acute pancreatic necrosis in the rat produced by obstruction of ducts plus ischemia (hematoxylin and eosin; reduced from x150).

effects of both partial and complete occlusion also were examined. Different degrees of ischemia of the pancreas were produced by varying the extent of reduction of circulation.

In general, whenever obstruction to the flow of pancreatic juice was produced, the gross changes consisted of pancreatic edema and varying degrees of fat necrosis in the region of the pancreas and throughout the abdomen. Histologic examination of the pancreas disclosed dilatation of ducts and acini; edema with infiltration, predominantly interlobular, of lymphocytes, monocytes, and a few polymorphonuclear leukocytes; atrophy and degenerative changes of the acini; and necrosis of intrapancreatic and extra-pancreatic fat. Pancreatic parenchymal necrosis and hemorrhage, however, occurred infrequently. It was found that the changes were the same whether or not a common channel existed and whether obstruction was complete or partial (Fig. 1).

Occlusion of pancreaticoduodenal arteries alone without interference with the flow of the external secretion produced only a slight effect. Occasional foci of parenchymal necrosis with the infiltration of a few lymphocytes, monocytes and segmented leukocytes were observed, but otherwise the pancreas appeared normal. More extensive devascularization of the pancreas by occlusion of more of its arterial supply, however, resulted in marked changes, including necrosis, interlobular and intralobular edema, infiltration of leukocytes, some proliferation of fibroblasts and fat necrosis within the pancreas and to varying degrees throughout the abdomen. Generally these histologic changes were found in association with local ischemic infarcts.

Inasmuch as pancreatic parenchymal necrosis and hemorrhage were not observed frequently after obstruction to the flow of pancreatic juice alone, varying degrees of temporary and permanent pancreatic ischemia were produced in fifteen animals in addition to ductal obstruction. In these studies pancreatic parenchymal necrosis of varying degrees of severity and extent usually was added to changes previously enumerated as occuring after effective occlusion of the pancreatic ducts (Fig. 2). After ligation of the pancreatiocoduodenal arteries, the areas of necrosis were usually small and scattered; after interference with arterial flow of greater magnitude the areas of necrosis were larger. After temporary occlusion of the arteries for fifteen minutes the necrosis seemed less marked but hemorrhage was severer.

These studies support in general the concepts derived by other investigators concerning the pathogenesis of acute pancreatitis. Acute obstruction of the pancreatic ducts will result in at least one form of acute pancreatitis with peripancreatic fat necrosis, but parenchymal necrosis is generally absent. Degenerative changes and atrophy of acinar cells occur, but parenchymal necrosis usually does not. These changes appear analogous

to those seen in acute edematous or acute interstitial pancreatitis in human beings. The production of a common channel between the bile and pancreatic ducts does not appear to modify the changes significantly.

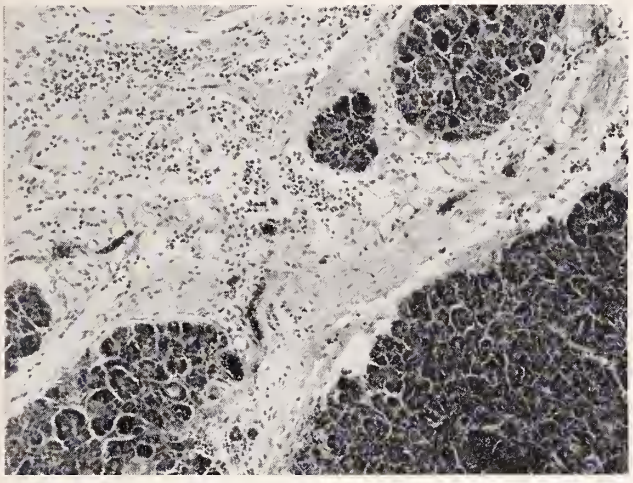


Fig. 3. Acute interstitial pancreatitis in man (hematoxylin and eosin; reduced from x100).

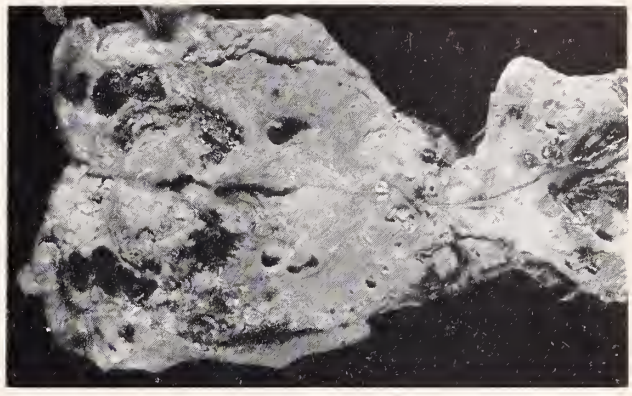


Fig. 4. Acute pancreatic necrosis in man fifty-six years of age. Chronic cholecystitis with stones. One stone in common bile duct at ampulla.

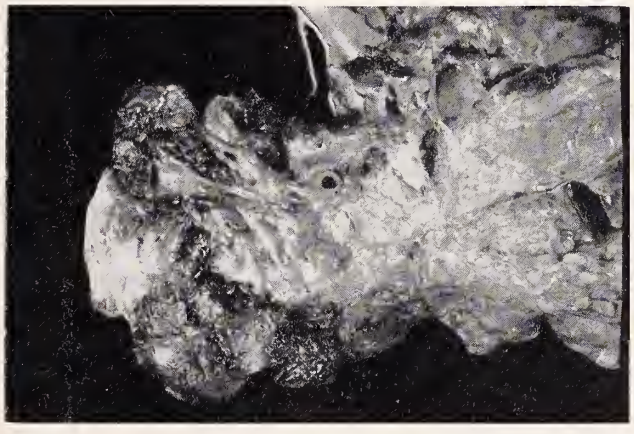


Fig. 5. Acute hemorrhagic pancreatitis in man twenty-nine years of age. No stones in gallbladder or ducts.



Fig. 6. Acute suppurative pancreatitis in woman sixty-one years of age. Note abscess in head. One large stone in gallbladder; no stones or dilatation of bile and pancreatic ducts.

If ischemia is added to obstruction of the pancreatic duct, parenchymal necrosis is produced in addition to other pancreatic damage. This will vary in severity depending on the degree and extent of arterial occlusion. Hemorrhage accompanies necrosis in some instances, especially if ischemia is temporary. Lesions of this type may be analogous to acute hemorrhagic pancreatitis in human beings.

Complete devascularization of large portions of the pancreas generally resulted in ischemic infarcts, but occasionally acute pancreatitis with pancreatic necrosis and with fat necrosis without dilatation of ducts and acini occurred. Thus a focal form of acute pancreatitis can result from prolonged severe and extensive ischemia alone.

All experimental methods of producing pancreatitis, including ours at the Mayo Clinic, remind me of a statement made by Johannes Müller,[16] a pioneer and leader in physiology, in his inaugural address as professor of physiology at the University of Bonn: "Observation," said he, "is simple, unimpeded, diligent, honest, without prejudiced opinion; the experiment, artificial, impatient, eager, saltatory, passionate, unreliable. Nothing is easier than to perform a number of so-called interesting experiments. It is only necessary to force Nature into a trial and she will always furnish a troubled, passive answer. Noth-

ing is more difficult than to interpret Nature, nothing so difficult as a valid physiological experiment!"

Pathologic Observations

Experimental methods help us to understand acute pancreatitis, but clinical, surgical and pathologic observations regarding this mysterious disease must not be neglected. In fact, it is mandatory that we both plan our experiments and test their validity on the basis of our clinical and pathologic observations if we wish to obtain accurate information on the pathogenesis of acute pancreatitis.

With these thoughts in mind, let us first clarify the condition we are talking about. Pancreatitis is a broad term and embraces a great variety of lesions. Under this heading we may have: (1) acute interstitial pancreatitis (Fig. 3), (2) acute pancreatic necrosis (Fig. 4), (3) acute hemorhagic pancreatitis (Fig. 5), and (4) acute suppurative pancreatitis (Fig. 6).

Now let us see whether clinical and pathologic observations can teach us anything about the pathogenesis of these conditions.

Acute and Subacute Interstitial Pancreatitis

Evans and associates[17] recently completed a review of all cases of acute and subacute interstitial pancreatitis encountered at necropsy at the clinic. Only twenty-five such cases (0.11 per cent of the necropsies) were found over a period of forty years. Analysis of the clinical histories failed to reveal a uniform specific clinical picture. In fifteen of twenty-five cases abdominal pain during the final illness was not mentioned. In each of the twenty-five cases, acute or subacute interstitial pancreatitis was considered to be an incidental finding at necropsy; in no instance could one be certain that pancreatitis was the dominant factor in the patient's illness or death. Significant findings noted concomitantly with acute and subacute interstitial pancreatitis at necropsy were as follows: diseases of the bile ducts or gall bladder in thirteen cases; evidence of recent intra-abdominal surgical procedures in eight cases; peritonitis, intestinal obstruction, uremia, and hepatitis in three cases each.

Except for the occurrence of intestinal obstruction, uremia and viral hepatitis, the concomitant findings at necropsy in these cases do not differ much from those observed in acute pancreatic necrosis with or without hemorrhage or suppuration. Interesting as they are to the pathologist, however, these cases of acute interstitial pancreatitis, if they do not go beyond this stage, do not as a rule constitute the main concern of the clinician and the surgeon. Whether the condition ever develops into other varieties and how often it does so, are still unanswered questions.

Acute Pancreatic Necrosis

I am mainly concerned in this paper with the other three varieties of pancreatitis, or, as I like to call them, acute pancreatic necrosis with or without hemorrhage or suppuration. In these conditions, as in acute interstitial pancreatitis, disease of the biliary tract seems to be a common accompaniment. In a series of cases studied at necropsy at the Mayo Clinic[18] cholelithiasis was encountered in 78 per cent and stones impacted in the ampulla of Vater in 12 per cent.

Biliary-Tract Disease.—Opie's[19] hypothesis, or the common-channel theory which postulates that a stone impacted in the ampulla of Vater causes pancreatitis, has dominated medical thought for the past half century. According to this theory a gallstone impacted in the ampulla of Vater results in regurgitation of bile into the pancreatic duct and activation of pancreatic enzymes. There are many objections to Opie's[19] theory and these have been reviewed by Ivy and Gibbs[20] and by Richman.[21] Suffice it to say, a common channel frequently is not present and in most patients who have acute pancreatitis and who undergo surgical procedures, it is impossible to demonstrate a stone in the ampulla or in the pancreatic duct.

In every large series of cases of pancreatitis, however, there usually are a few patients, about 5 per cent,[20] who have a common channel obstructed by a stone. In such studies, as in our own, usually a few cases also are found in which stones occur in the common bile duct without the existence of a common channel. In such cases, obstruction of the pancreatic duct may be the important factor. Even if there is no common channel the pancreatic duct may be obstructed by pressure of the stone on the thin septum separating the ducts near the duodenal orifice.[22] Then, of course, acute pancreatic necrosis also has occurred in cases in which there is neither a com-

mon channel nor stones in the duct. In these last-mentioned cases, obstruction of the pancreatic duct may be caused by such conditions as edema of the papilla of Vater or spasm of the sphincter of Oddi. That spasm of the sphincter of Oddi occurs is well known from numerous observations in patients with T tubes in the common bile duct.[23]

Obstruction may occur as a result of pancreatic stones, although this rarely happens, and intrapancreatic obstruction may occur from squamous metaplasia of the ducts. In this connection, it is interesting, however, that we seldom encounter diffuse pancreatic necrosis as a result of complete carcinomatous obstruction of the pancreatic duct. Haunz and I[24] studied twenty-five cases at necropsy in which the main pancreatic duct was completely obstructed by carcinoma and in none of them was diffuse pancreatitis or pancreatic necrosis observed. In 202 cases of carcinoma of the pancreas studied at necropsy[25] only one case of hemorrhagic pancreatitis was encountered.

These facts correlate well with the experimental observations that occlusion of the pancreatic duct alone does not produce pancreatitis but requires the additional factor of secretory stimulation. Clinically, it has long been apparent that the first symptoms of acute pancreatitis often appear after a big meal.

Before leaving the subject of biliary-tract disease, it should be noted that for many years the factor of obstruction has been overemphasized and the factor of infection, underestimated. Thal and Brackney,[14] in this regard, deserve much credit for refocusing our attention on the role of bacterial toxins and the Shwartzman phenomenon in experimental production of the disease. It may therefore be significant that infection of the biliary tract is commonly associated with pancreatitis.[18,26-28] Furthermore, it has been shown repeatedly by cholangiography that regurgitation from ducts and duodenum occurs commonly in the absence of a common channel and regardless of the manner of opening of the ducts.[20,29] Here, then, we have a mechanism of exposing pancreatic ducts to bacterial products in the manner carried out by Thal and Brackney experimentally. Although several investigators have obtained sterile cultures from the pancreas in as many as 50 per cent of their cases and the gallbladder has been found to be normal in 30 of 125 cases of acute pancreatitis,[20] the bacteriologic aspects of this disease deserve to be carefully reinvestigated.

Vascular Factor.—In studies of pancreatitis a vascular factor also is frequently mentioned. Experimentally, arterial occlusion alone produces only focal lesions and not diffuse spreading pancreatitis.[30] The vascular factor does appear to be important, however, in the transition of edematous pancreatitis into pancreatic[15,31] necrosis and in the production of pancreatitis by the Shwartzman phenomenon as employed by Thal and Brackney.[14] The effect of vascular changes has been studied[32] in one hundred cases of malignant hypertension and although infarcts were found in seven cases and focal parenchymal necrosis in twenty-one cases, diffuse hemorrhagic pancreatitis or diffuse pancreatic necrosis was not observed in a single instance.

If arterial occlusion by itself were an important factor in the pathogenesis of this disease, it would be encountered frequently in cases of periarteritis nodosa and subacute bacterial endocarditis, but it is not.[33] Although infarcts are commonly found in cases of periarteritis nodosa or subacute bacterial endocarditis, I cannot recall a single case of this type in which the disease terminated with diffuse pancreatic necrosis.

Although arterial occlusion or vascular erosion may not be important in the initiation of the disease, it may be very important in the progression of the lesion. This was well illustrated in a case of acute pancreatitis reported by Gambill and co-workers,[34] in which erosion and thrombosis of a branch of the pancreatico-duodenal artery caused infarction of the body and tail of the pancreas. Observations like these have led me to the opinion that in most cases pancreatitis begins as acute pancreatic necrosis. Whether it becomes hemorrhagic or not then depends on vascular complications such as erosion or occlusion.

Alcoholism.—Another condition that is commonly emphasized as being of pathogenetic significance in most large series of clinical cases of acute pancreatitis is alcoholism.[3,34-38] Necropsy in cases of acute[36,39,40] and chronic alcoholism also has revealed a high percentage of pancreatic lesions including acute hemorrhagic pancreatitis. Clark[40] was impressed by the absence of disease

of the biliary tract in most cases. Carter[41] and Domzalski and Wedge[42] found that a high percentage of alcoholic patients had increased values for serum amylase, and they felt that alcoholics suffer from repeated mild or subclinical attacks of acute pancreatitis. Albrink and Klatskin[43] have reported the occurrence of marked but transient lactescence of serum in patients with abdominal pain after bouts of acute alcoholism. The evidence presented suggested that the hyperlipemia and abdominal pain were due to acute pancreatitis.

How does alcohol play a role in the development of pancreatitis? Pancreatitis has not been produced experimentally with alcohol in animals, but Egdahl[44] suggested that in human beings gastroenteritis produced by alcohol might be responsible for pancreatitis. Myers and Keefer[36] suggested three possibilities: (1) that alcohol in the blood might damage the pancreas directly, (2) that duodenal congestion or inflammation might obstruct the ducts, and (3) that persistent vomiting might cause regurgitation of the duodenal contents into the pancreatic ducts.

Rich and Duff[3] suggested that alcohol could produce pancreatitis by obstruction due to duodenitis and inflammation of the papilla associated with pancreatic hypersecretion. McGowan, Butsch and Walters[23] have shown that after the oral ingestion of alcohol, hydrochloric acid and alcohol cause spasm of the sphincter of Oddi. After large quantities of alcohol have been taken orally, edema of the duodenal mucosa and papilla of Vater also may occur. Dreiling, Richman and Fradkin[45] have suggested that the oral intake of alcohol causes the pancreas (via the secretin mechanism) to secrete a large volume of juice against an obstruction produced by spasm and edema of the papilla.

Malnutrition.—Recent reports offer still another possible role for alcohol in the etiology of pancreatitis,[46,47] namely, the protein and vitamin deficiencies that occur in chronic alcoholic patients. It has been suggested that the chronic undernutrition of alcoholic patients produces a situation analogous to that of ethionine pancreatitis. We have studied pancreatic lesions in a wide variety of conditions in which malnutrition is a feature including uremia,[48] obstruction of the small intestine[49] and carcinoma of the stomach, but in none of them has acute pancreatic necrosis or acute hemorrhagic pancreatitis been a feature. In these cases dilatation of acini, inspissation of secretion and atrophy were the prominent features, and vomiting and dehydration as well as malnutrition were considered to be contributing factors in producing the lesions.

In studies of fatal cases of chronic ulcerative colitis[50] and cirrhosis of the liver,[51] conditions also associated with malnutrition, these and other lesions, especially chronic interstitial pancreatitis, were commonly found in the pancreas, but it is not possible, in the light of present knowledge, to relate these changes to diffuse pancreatic necrosis. It is interesting that in a study of pancreatic lesions associated with cirrhosis of the liver[51] the incidence of these lesions was found to be higher in twenty-nine patients with histories of alcoholism than in others, but the number of patients studied was too small to be of statistical significance.

Postoperative Pancreatitis.—In most cases of postoperative pancreatitis the disease occurs after operations on the stomach and biliary tract.[52-55] Surgical manipulation and trauma to the pancreas occur most commonly in operations in this region. Not infrequently the duct of Santorini may be ligated, severed or injured, and the circulation to the pancreas may be impaired when the duodenum is mobilized during gastrectomy.[52] Sludging of pancreatic secretions incidental to medication, dehydration and vomiting may be a contributing factor that merits further investigation.[53] Reports from the literature suggest that operative investigation[54-56] of the common bile duct and cholangiography and use of the long-arm T tube[54] as well as sphincterotomy[57] are important factors in precipitating acute pancreatic necrosis. According to those who have studied serial determinations of serum amylase in patients after operation, the incidence of pancreatic disease as interpreted by this test is very high.[58] Perryman and Hoerr[59] indicated that a third of the patients had abnormal elevations of serum amylase. Most increases occurred after operations on the stomach and biliary tract.

Of particular interest are the cases in which pancreatitis occurred after operations far removed from the pancreas, such as, transurethral prostatic resection. In these cases, it has been postulated, that sludging of pancreatic secretions and release of proteolytic enzymes from resected prostatic

tissue play a role in imitating pancreatic necrosis.[60,61]

Pancreatitis that occurs during and shortly after pregnancy also is poorly understood and warrants further investigation.[17,62-64] In our own cases, and those reported in the literature, a high incidence of gallstones has been noted.

Summary and Conclusions

This review by no means exhausts the clinical and surgical conditions associated with acute pancreatitis and pancreatic necrosis, but perhaps enough has been said to emphasize the complexity of the pathogenesis of this disease of the pancreas. Although the experimental methods used to produce pancreatitis have done much to elucidate the pathogenetic mechanisms involved, it seems clear to me that most clinical, surgical and pathologic observations support the view that this disease is not the result of any one factor nor any one combination of factors, but that there are a great many factors and that they are often present in different combinations. In other words, the tissues and secretions of this organ respond in a similar fashion to a wide variety of injuries.

Every single case should be studied carefully from clinical, chemical, surgical and pathologic aspects, in order to learn more about the pathogenesis of this disease. Each case presents its own problems, and factors that may be of pathogenetic significance in one instance may not hold at all for the next one. For this reason the practicing physician and surgeon, by careful observation, can contribute greatly to our knowledge of this condition and can often indicate new methods for the experimentalist to use in approaching the problem.

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Modern Therapy in Diabetes Mellitus, Insulin, and the Oral Hypoglycemic Agents

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MODERN trends in drug therapy and clinical investigation have as a goal the delineation of specific drug action in contrast to the earlier forms of empirical therapy, which for the most part were symptomatic. This tendency is desirable if it results in the reversal or amelioration of the basic cause of a disease, but it may, on the other hand, be futile and misleading if specific symptoms are interpreted as wholly representative of the disease process. In this latter circumstance, an alteration of a symptom might be construed as a correction of the underlying pathologic process. A hypothetical example of the fallacy of such reasoning is use of a fever-reducing drug such as aspirin as the treatment for typhoid fever. It is more difficult to give examples when the underlying pathologic lesion or its etiology is less clearly defined. Does a drug which acts solely to lower blood pressure control the disease state called hypertension? And does a hypoglycemic drug ameliorate diabetes mellitus?

There has recently been greatly renewed interest in oral therapy of diabetes, which has been further stimulated by the availability of effective oral hypoglycemic agents. Opinions vary widely concerning the real value of this mode of therapy. Some authorities assume that diabetes is indeed improved, while others are equally emphatic that the underlying metabolic defect is not being repaired and that consequently, such treatment merely influences one laboratory manifestation, just as hyperglycemia can be reduced by artificially lowering the renal threshold by means of phlorhizin. Since evidence is not yet available to settle this controversy, it is hoped that this consideration of the problem may be helpful in both orientation and in the assignment of various therapeutic measures to their proper position in the management of this disease.

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Physiological Aspects of Diabetes

Diabetes mellitus is a hereditary disease characterized by permanent hyperglycemia and glycosuria and impairment of the body's normal ability to utilize food. The clearly defined metabolic defect is most strikingly illustrated by failure of peripheral utilization of glucose by skeletal muscle. That the immediate cause of diabetes is an actual or relative deficiency of endogenous insulin is established beyond question. Physiologic treatment consists essentially in compensating for this deficiency so that the diabetic taking an adequate diet can maintain his normal nutritional state and repair his tissues along normal metabolic pathways. In consequence, the blood-sugar level falls. In the untreated diabetic, however, hyperglycemia *per se* may, as some contend, actually reflect a compensatory mechanism essential to his survival and may even facilitate the utilization of glucose by the muscle cells.

The principles of treatment of diabetes have been established on the basis of the pathogenesis of the disease. Actual insulin deficiency can be produced by any mechanism which will deprive the body of its insulin-producing cells or inhibit their function. Surgical removal, or destruction of the islets by neoplastic infiltration, are relatively uncommon. Traumatic injuries to the pancreas are infrequent although damage by disease is known to occur. Experimentally, diabetes can be produced by the administration of cytotoxic chemicals such as alloxan,[1] which has a specificity for the beta cells of the pancreas, or by agents that overstimulate or sufficiently increase demands on these cells and ultimately exhaust them, such as, anterior pituitary extracts[2] (growth hormone), and a long continued plethora of glucose.[3] Similarly, substances capable of increasing the rate of insulin destruction (insulinase),[4] or those having a "block-

ing effect" (antibodies)[5] would be capable of causing diabetes.

Most cases of clinical diabetes fall into a different category and probably do not represent total insulin deficiency. Usually, it is more realistic to attribute the symptoms to diminished insulin production or interference with the rate of release of insulin by the beta cells, as proposed by Wrenshall, et al,[6] of Toronto. It was observed that in certain instances of diabetes the amount of insulin which could be extracted from the pancreas following its removal after death was not less than normal. Furthermore, in certain of these glands, the beta cell granules, which are assumed to be the precursor of insulin, appear to be larger than normal.[7] Wrenshall suggested that perhaps some release mechanism is at fault, which prevents the mobilization of the insulin.

Obesity, hyperthyroidism, hyperpituitarism, and overactivity of the adrenal cortex, are clinical factors which may overwork and ultimately damage the islet mechanism, resulting in an inadequate supply of insulin. These effects may be partially or wholly reversible and correction of the abnormality, be it a weight reduction or removal of a pheochromocytoma, not uncommonly serves to restore the deficiency, thereby permitting the metabolism of carbohydrate, protein, and fat to return toward normal.

There is considerable experimental evidence to support the theory that some types of diabetes may result from an increased destruction of insulin formed by the pancreas.[8] Insulinase, an enzyme which occurs naturally in the liver, has been found to be quantitatively increased in some diabetics. Such a patient might produce entirely normal, or even greater than normal, amounts of insulin, yet because of more rapid or more extensive destruction of the hormone a relative deficiency would develop.

Also, there may be other inhibitors of insulin as yet unidentified which could account for the apparent existence of a tissue barrier which is observed in certain cases of severe insulin resistance.

Action of Insulin

In the presence of insulin, certain physiological effects are measurable and can be shown to be specifically related to the action of the hormone itself. A catalytic action occurs in the Krebs cycle, which is the final common pathway for the oxidation of all foodstuffs to carbon dioxide and water.[9] Insulin is involved in the reversible reaction of glucose with adenosine triphosphate to form glucose-6-phosphate.

A second, and equally-important, function of insulin is its enhancement of the transfer of glucose across the cell membrane.[10] This action may be non-specific for glucose since it has been demonstrated with other sugars bearing a close structural relationship to glucose. Nevertheless, since glucose is the only sugar normally found circulating in the body fluids, the action appears to be specific *in vivo*. Other actions of insulin have been demonstrated; and, without dwelling on them extensively, it should be mentioned that insulin also accelerates the conversion of glucose to glycogen in muscle and liver, it accelerates the conversion of glucose to fatty acids in the liver and adipose tissue, and it is necessary for the oxidation of pyruvic acid to carbon dioxide and water. Finally, it is important in protecting the body against nitrogen wastage, insuring normal repair and growth.

As pointed out earlier, all these effects on assimilation and utilization of essential energy producing foodstuffs, glucose, protein, and fat, reduce the concentration of glucose in the blood and prevent glycosuria. Insulin permissively re-establishes normal metabolic pathways of utilization, and the effects are quantitatively measurable.

The clinical effects of absolute insulin deficiency are well known and clearly defined. In such deficiency, hyperglycemia and glycosuria actually represent only the first step in the failure in metabolism. Associated with such deficient utilization in the severe diabetic, there soon follows a reduction of glycogen stores in the liver, the muscle and the skin, other serious consequences of nitrogen imbalance, and finally, ketosis.

Since preservation of life is the first law of biology, the organism must call into play other abnormal or emergency mechanisms in its attempts to sustain a supply of energy to the cells. This alternate mechanism is based upon the utilization of fat and proteins and results in the production of ketones in the liver. Ketone bodies can be utilized as a source of energy by the cells in the absence of insulin,[11] a measure which is called upon in the first stages of starvation. Obviously it must be a temporary alternative, and, furthermore, since the production of ketones is not regu-

lated quantitatively, overproduction occurs far beyond the power of the cells to utilize it for energy. Acetonuria is a protective mechanism to excrete the excess ketone bodies.

As a result of protein breakdown, there is in addition a great increase in nitrogen excretion in the urine and the rapid establishment of a negative nitrogen balance. Acidosis and dehydration are soon established and since the ketone bodies combine with fixed base, there is also a fall in the carbon dioxide combining power and a shift of pH of the blood toward the acid side.

The toxic effects of the ketone bodies on the central nervous system include stimulation of the respiratory center, causing hyperpnea, or Kussmaul respiration, followed by coma, circulatory collapse, and ultimately, death. All of these effects can be reversed, short of death itself, by the judicious and vigorous administration of insulin.

Insulin Therapy

The efficiency of replacement of the actual or relative insulin deficiency in diabetes depends upon a smooth release of insulin having its availability proportional to physiologic demand. Soluble, quick-acting insulin is not the most efficient since its time-action is too abrupt and not sustained over a long enough period. Attempts to meet this need culminated in 1935-1936 with Hagedorn's[12] discovery of protamine insulin, which was further modified by the addition of zinc[13] in order to prolong the action over the period of nocturnal fasting. Later studies have provided modifications having peaks of release at the time of greatest need, namely, during the periods of heaviest metabolic load occasioned by food intake.

These developments in insulin modification have provided preparations of different time action. Protamine Zinc Insulin, Globin Insulin, NPH Insulin and, finally, Lente Insulin. Short of modifying insulin in such a way that its release from a subcutaneous depot would be regulated by the blood-sugar level (that is, so that hyperglycemia would effect its release while normo- or hypoglycemia would not), the modification of the time-action of insulin has advanced about as far as possible.

The next most obvious challenge lies in the development of an orally active substance which will effectively repair the underlying defect in diabetes. It is this problem that has proven to be a most difficult one.

Glycosuria and hyperglycemia are the most easily observed symptoms of diabetes, and, in addition, are objective in that they can be conveniently measured. They are regarded by both the doctor and the patient as criteria of control or lack of control of diabetes. Consequently, measures to combat excessive blood sugar have been classified as antidiabetic, and drugs that lower the blood-sugar level are called antidiabetic drugs. This term is fallacious, as pointed out by the Informational Committee on Oral Hypoglycemic Drugs of the American Diabetes Association.[14] Such drugs should only be classified as hypoglycemic compounds until it is shown that their effects on basic physiologic processes parallel those of insulin itself, and that they establish a fall in blood sugar as a result of these actions and not merely an unrelated or even toxic incidental effect. It is obvious from the voluminous investigative effort already expended in research on the mode of action of the oral hypoglycemic agents that the problem is not to be easily solved.

Oral Hypoglycemic Agents

Over the years a great number of orally-administered compounds have been tested for their effects on the blood sugar. Some, like myrtillin, apparently had no actual measurable effects under control conditions, and others, like synthelin, were soon found to be too toxic for continued clinical use. A third type of drug, such as phlorhizin, simply lowered the renal threshold to glucose, thus permitting a massive excretion of glucose, reducing glycemia in a manner analagous to lowering blood pressure by continuous bleedings. Blood sugar may indeed be lowered by several means which obviously could not be interpreted as favorable to the longevity of the diabetic himself, for example, hepatectomy as cited by Stetten.[15]

Other and new approaches have recently led to the development of another class of drugs having blood-sugar lowering properties. In 1942, Janbon[16] published the first report of induced hypoglycemia in man following the oral administration of a sulfonamide derivative. This was followed by work of other investigators, including Bovet and Dubost,[17] in 1944, Loubatieres,[18] in 1944, and Chen,[19] in 1946, who studied similar compounds. Unfortunately, all of these compounds were found to

TABLE I. REACTION INCIDENCE

Forms Returned	1319
Cases Reported	7193
Side Reactions	389
Reactions Per Cent	5.36

TABLE II. REACTION CLASSIFICATION (NUMBER OF CASES)

Rash	109	Thrombocytopenia	2
Anorexia, Nausea, Vomiting	81	Purpura	2
Malaise, Lethargy, Fever	79	Eosinophilia	2
Agranulocytosis, Leukopenia	58	"Headache"	2
General Allergy	25	Psychosis	1
Cardiovascular, Renal	16	Hypothyroidism	1
Exfoliative Dermatitis	6	Methemoglobinemia	1
Acute Anemia	6	Tachycardia	1
Jaundice, Liver Function	6	Sudden Myocardial Failure	1
Acute Edema	4	Unclassified	10
Crystalluria	3		

TABLE III. UNEXPLAINED FATALITIES

Sudden Myocardial Failure	1
Sulfonamide Sensitivity	2
Bone Marrow Depression	1
Dermatitis Exfoliative	1
Acute Pulmonary Edema	1
Liver Involvement	2

cause liver and kidney damage which precluded their use in the treatment of diabetes.

Early in 1954, two German investigators, Franke and Fuchs,[20] reported that a new soluble sulfonamide derivative, designated BZ-55, exerted a hypoglycemic effect in normal and certain diabetic patients, without evidence of acute toxicity. Their work was extended to include a series of diabetic patients,[21] and in 1955 investigative programs were established in the United States[22] which included not only this compound, termed carbutamide in the United States, but also a second German compound designated tolbutamide.

Chemically, these compounds are classified as sulfonamide derivatives, and since they were representatives of a family of drugs which had been used extensively in medicine, it seemed that they held promise as possible effective agents in diabetes.

The clinical trial investigation of BZ-55, or carbutamide, as it had been designated, was one of the largest ever attempted by a pharmaceutical manufacturer. During the period from July, 1955, to October, 1956, the drug was made available to more than 2,900 investigators for evaluation in approximately 10,000 diabetic patients. Such a broad-scale trial was deemed necessary for two basic reasons. Although toxicity had been reported to be quite small, nevertheless, the compound did bear a relationship to other sulfonamide derivatives which have been known to cause toxic side reactions. Furthermore, since the administration of the drug would be continuous over a period of years, there was no satisfactory way of determining the possible harmful effects from chronic administration. Therefore, a broad trial seemed to be the only practical method of assessing the incidence of acute and chronic toxicity and evaluating the real usefulness of the compound.

Within a short time a number of facts became known. First of all, carbutamide had limited application and was effective in only certain types of diabetes, while it did not protect at all against serious manifestations, as ketosis, relapse in infections, and prevention of nitrogen wastage. Secondly, and more important, evidences of toxicity became apparent.

In July, 1956, information was received about three unexplained deaths in patients taking carbutamide. In each instance the possibility that the administration of carbutamide may have contributed to the findings demonstrated at autopsy could not positively be excluded. Analysis of the clinical trial reports in September revealed a total of eight of these unexplained fatalities and an over-all reaction rate of 5.36 per cent[23] (Tables I, II, III). While it was true that the vast majority of side reactions were relatively minor and usually reversible as soon as therapy was stopped, on the other hand, the deaths could not be disregarded. At this time evidence was also received from the Toronto laboratories of Dr. Charles Best[24] which indicated that liver damage had been demonstrated in depancreatized animals maintained on both carbutamide and insulin. Similar findings were reported from Denmark.[25]

In view of the serious side-effects, and the fact that in most patients oral treatment is merely an optional alternative form of therapy of convenience rather than necessity, the broad clinical trial of this drug was suspended on October 26, 1956.

From the standpoint of toxicity, the experience reported with tolbutamide has been much more favorable.[26] So far, no deaths have been reported and, apparently, the incidence of side reactions is considerably less. Nevertheless, there is general agreement that the mode of action of both compounds is the same, although there is some evidence that the drug is less effective. This raises another important question—is effectiveness interrelated with toxicity?

The advantages of oral therapy are quite apparent. First, the patient taking the drug can forego

the daily injection of insulin. If not previously taking insulin, hyperglycemia and glycosuria may be reduced in patients who could not previously be successfully managed by dietary restriction alone. The factor of convenience, while it must not be disparaged, especially from the patient's standpoint, must be examined critically before it can be accepted. A review of the present knowledge about mode of action of these drugs may be helpful.

Action of Sulfonylureas

To be a true substitute for insulin, a proposed agent should be able to correct the fundamental defects in metabolism which are associated with the clinical syndrome called diabetes mellitus. Unquestionably, the sulfonylureas do not meet these criteria. Clinical and experimental evidence indicates decisively that in the total diabetic, either in animals or in humans, no adequate lowering of blood sugar can be obtained. It is absolutely necessary that some pancreatic function be present before a measurable lowering of the blood sugar can be produced by these compounds. Several theories of action can be advanced.

As a first consideration, the effectiveness of available insulin could be increased through any one of several mechanisms—by increasing the peripheral utilization of glucose by some mechanism independent of insulin itself, by influencing liver glycogen levels, by inhibiting insulinase, or by stimulating the output of insulin from the beta cells.

It would seem logical that if these drugs increased the effectiveness of the available insulin, that this insulin effect would be measurable in the peripheral tissues.

The experimental evidence available up to the present time is contrary to this concept. The following summary is from the report of a committee who reviewed the present knowledge of the effects of the sulfonylurea compounds.[27] There is no evidence of blood-sugar lowering in eviscerated dogs (Levine), rabbits (Wick), or rats (Ingle), either in the absence of or with supplemental insulin present. Furthermore, there is no change in glucose uptake by the isolated rat diaphragm or in rat adipose tissue where insulin has a marked effect (Krahl, Cahill, Clarke, Field). Finally, in this regard, there is no increase in arteriovenous difference after glucose loading (Goldner).

Data presented to show an effect on liver glycogen is somewhat confusing. In part this may be attributed to variations in experimental design. Evidence has indicated that the sulfonylurea compounds inhibit the output of glucose from the intact liver and, specifically, of that derived from fructose and galactose (Renold, Craig). On the other hand, liver slice studies indicate that the addition of these compounds to the medium does not inhibit glycogenolysis or glucose output (Cahill, Sutherland).

While the glycogenolytic effect of glucagon and epinephrine in liver slices may be inhibited by the drugs (Vaughn) and in the intact animal glucose release by these agents may also be inhibited (Izzo), this latter finding could not be confirmed by others (Fajans, Anderson, Goldner).

In vitro inhibition of insulinase has been positively demonstrated (Mirsky) but *in vivo* experiments indicate that blood levels of the compounds do not reach a level sufficiently high to confirm these findings. Furthermore, when similar concentrations are used in isolated liver preparations, there was no significant reduction of insulinase activity (Vaughn, Williams).

Early in the experience with these compounds it was proposed than an inhibition of the alpha cells of the pancreas with a diminution of glucagon output could account for the blood-sugar lowering effects. The bulk of the present evidence fails to support this theory.[28]

Finally, the stimulation of the release of insulin from the pancreas could also increase blood-sugar lowering and it has been demonstrated that amounts of carbutamide infused into the arterial supply of the pancreas resulted in a fall in the peripheral blood-sugar level in amounts approximating 20 per cent (Colwell).

Cross circulation experiments indicate that blood from the pancreaticoduodenal vein but not the mesenteric vein of the dog treated with carbutamide resulted in a fall in the blood sugar in the recipient (Foa).

Although these latter findings seem to indicate that there must be some stimulation of insulin release, the failure of the drugs to alter blood glucose in a manner known to be associated with insulin injection is inconsistent with this hypothesis. V. Holt's later observations[29] indicating a stimulating effect of carbutamide on insulin activity, followed by a relative insufficiency and

TABLE IV. COMPARISON OF INSULIN AND ORAL SULFONYLUREAS

	Insulin	*Sulfonylureas*
I. *Indications*		
(a) All diabetic children	Yes	No
(b) Severe cases of diabetes	Yes	No
(c) Complications of diabetes	Yes	No
Acidosis	Yes	No
Surgery	Yes	No
Emergencies	Yes	No
(d) Diabetes in pregnancy	Yes	No
(e) Mild diabetes in elderly obese patient not controlled by diet	Yes	Yes
II. *Effects*		
(a) Antidiabetic	Yes	No
(b) Hypoglycemic	Yes	Yes
(c) Promotes utilization of carbohydrate and fat in a normal manner	Yes	Evidence Controversial
(d) Maintains normal nitrogen balance	Yes	Unknown
(e) Quantitative dose-response	Yes	No
(f) Physiological lowering of blood sugar	Yes	Unknown
(g) Eliminates ketosis	Yes	No
III. *Actions*		
(a) Physiological replacement	Yes	No
(b) Deficient islet cells stimulated There is some concern as to whether or not stimulation of deficient islet cells may eventually result in exhaustion of the already deficient insulin production.	No	Probably yes
(c) Liver cells protected	Yes	Unknown
(d) Liver metabolism interrupted	No	Possibly
(e) Restores peripheral utilization of glucose	Yes	Controversial
(f) Insulin secretion stimulated	No	Possibly
IV. *Toxicity*		
(a) Hypoglycemia	Yes	Yes
(b) Drug allergies	——	Yes*

*Drug allergies—reported effects on skin, bone marrow, liver. Long-term effects still in question.

decrease in sugar tolerance, and increase in liver glycogen of fasting animals along with other inconsistencies, seem to point to a different mode of action.

From the foregoing necessarily brief review of the physiologic effects of the oral sulfonylureas, it can be seen that in many crucial aspects, the action of these drugs can not be compared favorably with insulin. The only clearly positive fact presently available is that the blood sugar can be lowered, but this effect is a result of actions as yet not clearly defined. The following table (Fig. 4) of comparison may help to clarify the differences.

Critical Appraisal

Editorial comment relative to the clinical use of these compounds has been unanimously conservative. The American Diabetes Association presented a number of questions pointing out the shortcomings[30] and stated that "at the moment it seems as if they (the sulfonylurea drugs) are most effective where we do not need them, namely, in the adult who is overweight and mildly diabetic. The sick, acidotic diabetic patients still need Insulin," and further, "the education of the physician and the patient towards effective management of diabetes is the finest form of regulation that medicine has offered for any disease. It is not yet in the interest of good medicine and the well-being of diabetic patients to support the release for marketing of an 'insulin substitute' before adequate clinical testing and appraisal have been completed."

In the monograph appearing in the New and Nonofficial Drugs Section of the J.A.M.A. for July 20, 1957,[31] the secretary of the committee pointed out that the chief hazard will be the high incidence of ketosis during the transfer from insulin because certain patients are not suitable candidates for such conversion, and, furthermore, that "it should always be borne in mind that the only real advantage . . . over insulin is its effectiveness when given orally and that insulin remains the indispensable drug of necessity in all diabetic complications." Stetten commented[15] that since these drugs should be reserved for the treatment of those diabetic patients who fail to go into ketosis when insulin is withdrawn, such a statement is almost tantamount to saying that these drugs will control the symptoms of diabetes in the symptom-free diabetic patient, and until more is known about the mode of action, it will be difficult, in his opinion, to know with assurance whether or not we are doing the diabetic patient a favor when we lower his blood-glucose concentration by the administration of a drug of the sulfonylurea group.

Summary

Diabetes mellitus is a complex disease manifesting many alterations in metabolism which can be reproduced experimentally and measured. Insulin, the physiologic therapeutic agent, will reverse each of these abnormal processes regardless of the state of the severity of the diabetes. As a result of this reversal there is a disappearance of abnormal symptoms and also, a return towards normal levels of the blood sugar with the disappearance of glycosuria. So far the oral hypoglycemic agents presently undergoing study will measurably alter the blood-sugar level and the glycosuria in certain, but not nearly in all, selected diabetic patients. With these exceptions, they fail to meet in any way the criteria of an insulin substitute. So long as the compounds are used with full understandings of their limitations it can be presumed that they are useful measures

in a limited group of diabetics, but whether this usefulness will prove to be a two-edged sword remains to be seen.

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JOINT ASSA-AHA SESSIONS

A program which includes a symposium on "Genetic Factors in Cardiovascular Disease" and panels on the subject of arteriosclerosis will be presented jointly by the American Society for the Study of Arteriosclerosis and the American Heart Association at the AHA Scientific Sessions in San Francisco, October 24-26. This year, for the first time, the American Society for the Study of Arteriosclerosis is holding its annual meeting to coincide with the American Heart Association's scientific sessions.

The joint ASSA-AHA program opens Friday morning, October 24, with a symposium, "Genetic Factors in Cardiovascular Disease," Dr. Victor A. McKusick, Baltimore, and Dr. David Adlersberg, New York, Chairmen. Sessions on the following subjects will be included: "Hypertension," with Sir George Pickering, Oxford, England, Dr. Caroline B. Thomas, Baltimore, and Dr. Douglas R. Drury, Los Angeles, participating; "Atherosclerosis," with Dr. Arthur G. Steinberg, Cleveland, Dr. Frederick H. Epstein, Ann Arbor, Michigan, and Dr. Richard H. Osborne, New York; "Rheumatic Fever," with Dr. May G. Wilson, New York and Dr. Paul A. Lembcke, Los Angeles; and "Congenital Malformations," with Dr. Catherine A. Neill, Baltimore, and Dr. McKusick. Discussion will be opened by Dr. Antonio Ciocco, Pittsburgh.

Panels will be held on Saturday afternoon, October 25, on "Emotional Factors in Atherosclerosis," with Dr. Louis N. Katz, Chicago, Moderator; and "Hypertension and Atherosclerosis," Dr. A. C. Corcoran, Cleveland, Moderator.

Cysts of the Spleen

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CYSTS of the spleen are rare, representing the least frequently encountered cystic disease involving abdominal viscera. The first reported case of a splenic cyst was a dermoid reported by Andral,[1] in 1829. The first splenectomy because of cyst was performed by a French surgeon, Péan,[2] in 1867. Surgical interest in splenic cysts was aroused in this country by Fowler,[3] whose first article on the subject appeared in 1910. He maintained an active interest in this problem until his death, and his scholarly articles[4-7] did much to clarify the nature of the condition.

Present Study

The work of Fowler and others stimulated us to review the experience with splenic cysts at the Mayo Clinic. We first took a sampling from the records in our files to determine the incidence of splenic cysts and then restricted our study to those cases in which the spleen was surgically removed because of cystic disease and in which the clinical records, as well as gross and microscopic sections, were available for investigation. These cases were subjected to a detailed clinical and pathologic study.

Results

During the years 1935 through 1952, a total of 1,283 splenectomies were performed at the clinic. One or more cysts were present in fourteen of these spleens, an incidence of 1.09 per cent.

The first splenectomy done at the clinic because of a cyst was performed by Dr. W. J. Mayo, in 1911; only eighteen additional cases were encountered in the subsequent years through 1956. This total of nineteen cases comprises the basis of our study. These cases were divided into two groups. The first group consisted of the five cases in which the cysts were small (5 cm. or less in diameter); the second group consisted of the remaining fourteen cases in which the cysts were larger than 5 cm. The largest cyst measured 30 cm. in diameter.

The ages of these nineteen patients ranged from eleven to sixty years, with an average of thirty-two. The sex distribution in this series was eleven females and eight males, which confirmed the findings of other observers that cysts of the spleen occur more frequently in the female. However, the suggestion that formation of splenic cysts may be related to pregnancy and abnormal menstruation was not borne out.

Trauma has been mentioned as a cause of cyst formation in the belief that these lesions are often simply encysted hematomas. Histories of trauma were obtained in four of these cases, but it appeared extremely questionable that this factor was the primary cause of the cysts. The mass had existed for two years in one case, but just prior to operation it had enlarged rapidly after trauma. The findings in this instance substantiated the occurrence of recent hemorrhage into an already existing cyst; it appears likely that this is often the case.

Malaria and syphilis as causes of splenomegaly, together with the supposition that such enlarged spleens are more vulnerable to trauma and subsequent formation of cysts, were not established in this study.

We could find no sign or symptom attributable to the small cysts. However, in the group of large cysts, two clinical features were present in all but two cases. They were a palpable mass in the left upper quadrant of the abdomen and pain in that same region. These two features occurred separately or in combination; however, more frequently than not they occurred together.

One of the questions we wished to answer was whether splenic cysts were ever the cause of hematologic disorders. The group of five cases in which small cysts were present included two

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cases of hypersplenism, a case of congenital hemolytic anemia and one of essential thrombocytopenic purpura. However, we could not incriminate the cysts as being the cause. Evidence of hematologic disease was absent in the group of large cysts.

the relationship of the cysts to the splenic capsule.

Capsular Cysts.—Five of the nineteen surgical specimens exhibited small, thin-walled cysts that



Fig. 1. Typical example of capsular or subcapsular splenic cysts. These cavities, usually multilocular, as in this instance, are filled with a coagulum and lined by a single layer of endothelial or mesothelial cells (hematoxylin and eosin; x30).

The diagnosis was made preoperatively in only two cases. However, splenic cyst was considered in the differential diagnosis in three other cases. Roentgenologic examination offered the most help in preoperative diagnosis. A plain roentgenogram of the abdomen was obtained in ten cases and revealed a large, soft-tissue mass in every instance. Excretory urography was done in five cases and disclosed downward displacement of the left kidney in all five. Roentgenologic examination of the stomach after a swallow of barium was done in five cases, and displacement of the stomach to the right was evident in all. The information gained from these examinations should direct one to a diagnosis of splenomegaly, and a "cystic feel" on palpation might suggest that the splenomegaly was due to cystic disease.

The treatment in these cases was splenectomy, and this is probably the treatment of choice in all instances. There were no deaths in this series.

Pathologic Features

Pathologically, it appeared practical to subdivide the group into two categories, depending on

were multiple in four instances and that apparently arose from elements within or subjacent to the splenic capsule. None of these cysts had been palpable clinically, and, although splenectomy had been performed in two instances for hypersplenism (purpura and hemolytic icterus, respectively), it was not considered that the cysts themselves had contributed to the symptomatology in either instance.

All these capsular cysts appeared on the anterior margin or upper surface of the spleen. Their dimensions ranged from microscopic locules to fluid-filled spaces, the largest of which measured 2, 3, 4, 15 and 5 cm., respectively. The majority were thin-walled and filled with watery fluid, but several contained a dark, bloody, liquid material and exhibited thick walls. One such thick wall contained zones of calcification. Microscopically, the lining cells were plump, spindled and single-layered. This finding, along with a content of thin but sometimes coagulated, pink-staining fluid, suggested an origin from capsular lymphatic spaces or from sequestered clefts of peritoneal mesothelium (Fig. 1). Occasional erythrocytes

had found their way into these cysts, but none of the lesions was truly hemorrhagic.

Parenchymatous Cysts.—In the remaining fourteen cases, the cysts were parenchymatous with

Perisplenic adhesions were present in eight of the fourteen specimens in this category. They were so dense in three cases as to have posed major obstacles to splenectomy.

The cysts were solitary in twelve cases. In the



Fig. 2. *(a)* Splenic dermoid cyst, showing thick capsule and whitish lining of epidermis. *(b)* The fibrous, coarsely trabeculated walls of seven parenchymatous cysts appeared similar to this.

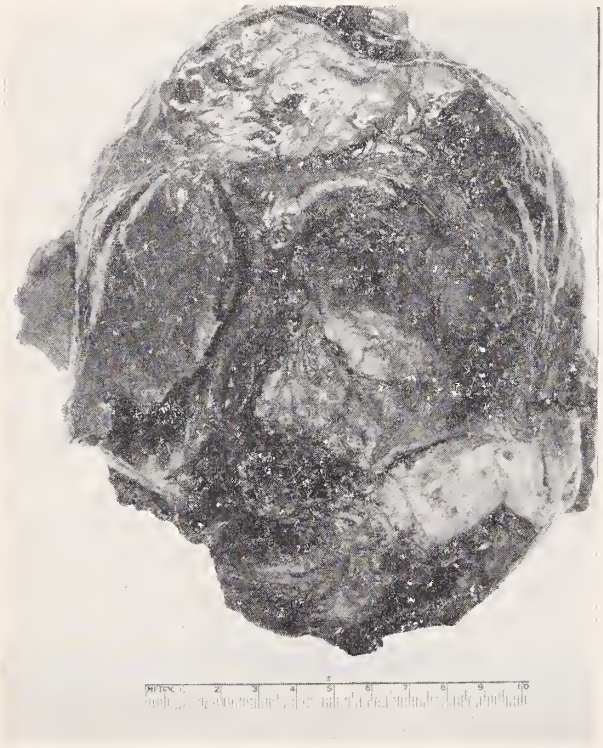


Fig. 3. Large parenchymatous cyst of spleen filled with old and recent blood clot.

respect to the site of origin. As already indicated, all these spleens had been large and symptomatic, being easily palpated in most instances. Weights of the intact specimens ranged from 100+ gm. to 4,235 gm., with the majority weighing in excess of 500 gm. Sizes ran from 8 by 7 by 7 cm. to masses exceeding 30 cm. in diameter.

remaining two cases, the entire spleen appeared to be involved in a diffuse process that had produced bosselations over the entire surface.

Contents of the cysts were "soupy" or "grumous" in the one example of a splenic epidermoid tumor (Fig. 2*a*). The two large spleens that were bosselated exhibited spongy and honeycombed surfaces that bled profusely. The gross appearance in these two spleens suggested cystic degeneration in basically solid tumors. The remaining eleven cysts, all unilocular, were filled with blood-stained or frankly bloody material in ten instances and with clear fluid in one.

After the contents of the cysts were washed out, the walls of the cavities were found to be coarsely trabeculated (Fig. 2*b*) in seven cases and smooth or uncorrugated in the remainder. In ten instances, a rind of tough fibrous tissue formed a wall or capsule for the cyst; in several cases, this otherwise white capsule disclosed dark zones resulting from ancient or recent hemorrhage (Fig. 3).

Microscopically, the diagnosis as to subtype was easy in the one epidermoid cyst (Fig. 4*a*). Likewise, the two bosselated tumors were typical examples of diffuse splenic hemangiomatosis with secondary cystification (Fig. 4*b*). Six of the remaining eleven parenchymatous cysts exhibited fairly uninterrupted linings with single or several layers of plump endothelial-like cells, which

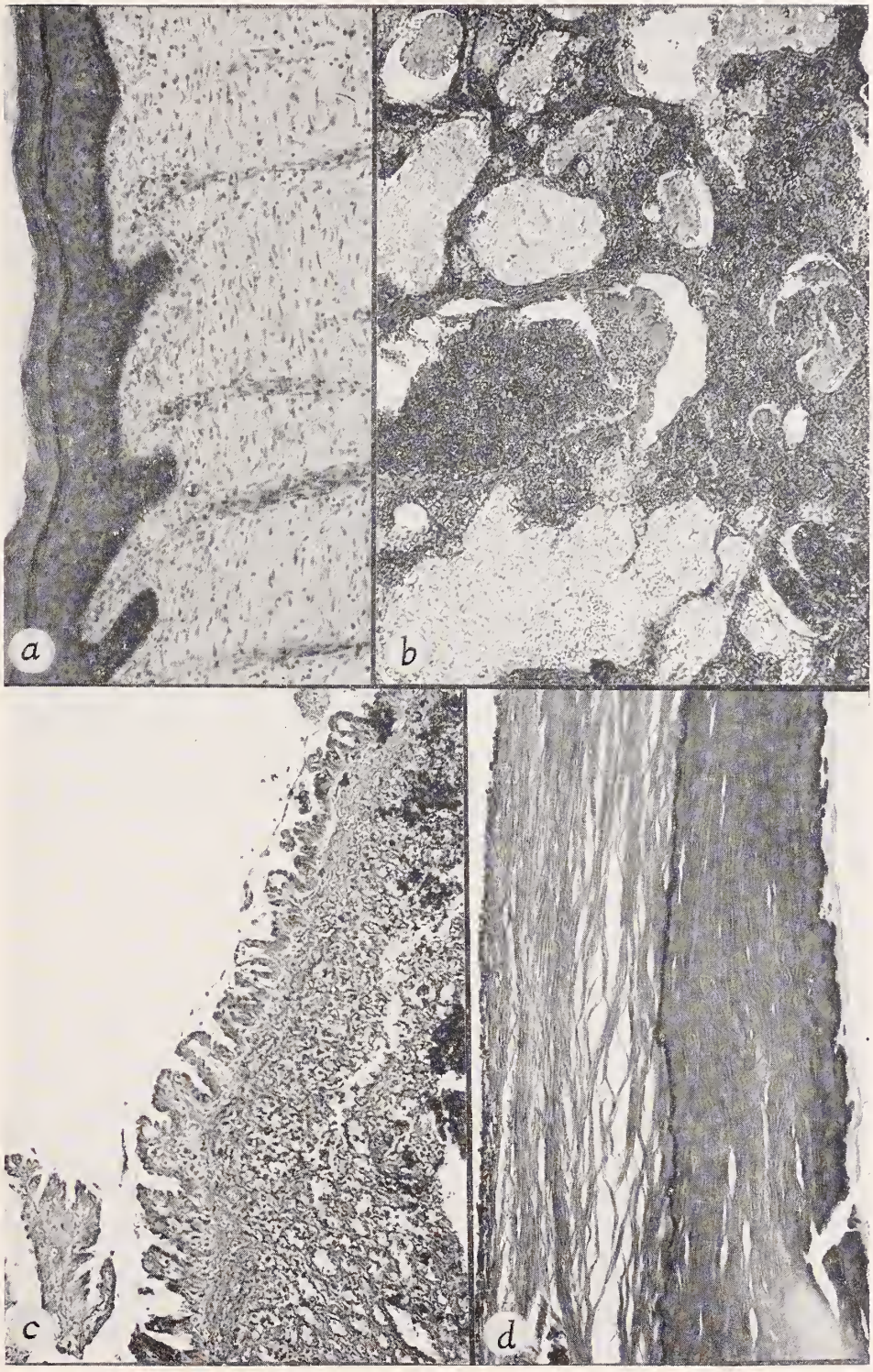


Fig. 4. Parenchymatous splenic cysts (hematoxylin and eosin). *(a)* Lining of cyst in Figure 2*a*, showing a thick layer of keratinizing epithelium with an underlying band of fibrous tissue (x100). *(b)* Splenic "hemangiomatosis." Cyst formation in the two cases displaying this feature was obviously degenerative in character (x50). *(c)* Papillary infoldings were a feature in one of six cysts whose linings appeared to be endothelial. This is the only instance in which the cells appeared to be proliferating (x100). *(d)* Thick fibrous linings, such as this, were features in five of the parenchymatous cysts (x100).

appeared to be proliferating in one case (Fig. 4*c*). In the remaining five cysts of this group, either a purely fibrous lining (Fig. 4*d*) existed or a fibrous lining was present that was interrupted here and there by zones wherein a few spindle cells were arranged in tandem to form a covering mantle.

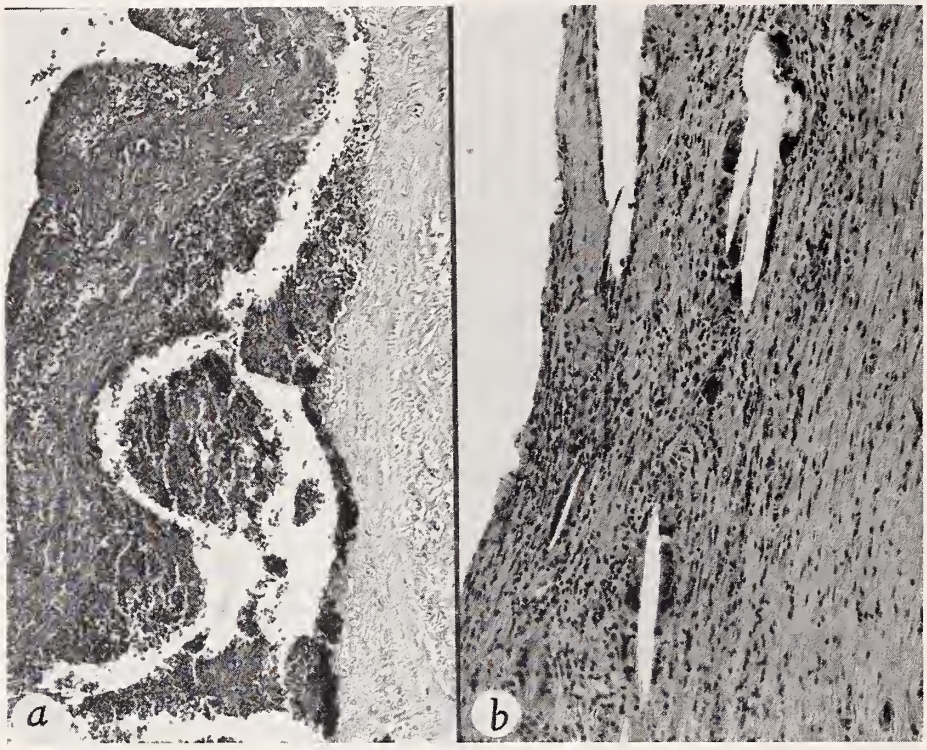


Fig. 5. Parenchymatous splenic cysts (both, hematoxylin and eosin; x100). *(a)* Dissecting through a fibrous investment are zones of old and recent hemorrhage. *(b)* Cholesterol-crystal clefts are hallmarks of recent hemorrhage.

Microscopically, the fibrous investment just described varied tremendously in thickness and in its complement of fibroblasts. In some cysts, it was thin, rather rich in young fibroblasts and almost lacking in collagen, whereas it was thick, acellular and almost completely hyalinized in others. Hemorrhage and impregnation with hemosiderin were evident in most lesions (Fig. 5*a*). Cholesterol-crystal clefts surrounded by foreign-body giant cells were noted in five cases (Fig. 5*b*).

The splenic parenchyma adjacent to the capsule of the cysts often appeared to be compressed. Farther away, the splenic sinusoids in a number of instances appeared to be so numerous and so dilated as to suggest the diagnosis of hemangioma, were it not for the finding of scattered malpighian corpuscles. These sinusoids frequently were lined by plump endothelial cells in a picture reminiscent of that seen in Banti's disease. An increased weight of true splenic tissue in these cases strongly suggested that the contained cyst had been exerting pressure on the splenic vein, with resulting splenomegaly.

Summary and Conclusions

A study has been made of nineteen cystic spleens surgically removed at the Mayo Clinic over a period of forty-six years. These nonparasitic cysts of the spleen were divided into capsular types (five cases) and parenchymatous types (fourteen cases). The former are multicentric, small and clinically unimportant. Pathologically, they appear to be derived from lymphatic spaces or peritoneal mesothelium. The parenchymatous category includes epidermoids, cystic hemangiomas and large unilocular cysts of uncertain origin. To label the latter "true" or "false," depending on the presence or absence of an "endothelial" lining, is impractical since many of the cysts would be labeled "true-false" by this criterion.

(Continued on Page 641)

Female Pseudohermaphroditism—The Adrenal Genital Syndrome

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FEMALE pseudohermaphroditism, a clinical entity, according to Young[1] was first described in 1865 by an Italian Crecchio who reported the case of a patient baptised as a girl but later thought to be a boy and reared as a boy. Twice this individual contracted gonorrhea. The physiognomy was that of a male. The breasts and nipples were small, the chest was hairy, the "penis" was six centimeters long and no testicles were palpable. The patient died at the age of forty-three years. Autopsy disclosed a uterus, tubes, and small ovaries. The adrenals were described as hypertrophied.

For many years accurate diagnosis of this condition was impossible and its clinical management had no foundation and was utterly confused. Now the confusion is resolved, accurate diagnosis is possible and clinical management is rationalized.

A pseudohermaphrodite is defined as a person in whom the gonads of only one sex are present but with abnormalities of the external genitalia which give doubt as to sex. In many of these persons secondary sex characteristics are the opposite of those in keeping with the gonads present and add to the uncertainty as to true sex.

The recent work of Wilkins and his co-workers[2] has done much to clarify this subject and make possible early accurate diagnosis and proper management.

The adrenal genital syndrome is a part of hyperadrenal cortisism. Manifestations of this may be divided into two main groups: (1) those with manifestations of the adrenal genital syndrome and (2) those presenting Cushing's Syndrome.

Children presenting the adrenal genital syndrome show excessive masculinization, accelerated epiphysial ossification, rapid but early terminated growth due to precocious muscular development and increase of the urinary 17 ketosteroids. In contrast, children of the Cushing's Syndrome have retarded growth, poor musculature, osteoporosis and obesity.

The adrenal genital syndrome may be due either to adrenal cortical neoplasm or to adrenal hyperfunction. The clinical manifestations of this syndrome vary with sex and the age the disorder begins. We are concerned here only with true sex females. The congenital form is due to fetal adrenal cortical hyperfunction. The postnatal form is due to either neoplasm or acquired adrenal cortical hyperfunction.

The work of Wilkins and his co-workers[3] in the administration of cortisone has proved of value not only in the treatment of hyperfunction but also as a diagnostic aid in differentiating adrenal hyperfunction from neoplasm. Wilkins has shown that the administration of cortisone causes a marked decrease in the output of urinary 17 ketosteroids in cases of hyperfunction but no decrease in the urinary 17 ketosteroids in those cases due to neoplasm. In addition to rapid growth, abnormal muscular development, and accelerated epiphysial ossification with increased urinary 17 ketosteroids these individuals are afflicted by a disturbance of electrolyte balance, with a tendency to a loss of sodium and elevation of serum potassium which may cause early death due to dehydration and circulatory collapse. Occasionally some of these individuals have hypertension without any abnormality of electrolytes. It is believed that enlargement of the adrenals when demonstrable is caused principally by hyperplasia of the reticular zone which is thought to be responsible for the secretion of androgen.

When female pseudohermaphroditism begins in embroyonic or fetal life, abnormalities of sex differentiation may be obvious at birth. There is hypertrophy of the phallus (clitoris) which resembles a penis with accompanying hypospadias. Often there is a persistent urogenital sinus which communicates ventrally with the urethra and dorsally with the vagina, uterus, and tubes. The appearance of the external genitalia varies consid-

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erably depending upon the degree of separation or fusion of the labial folds. The diagnosis of female pseudohermaphroditism due to congenital adrenal hyperfunction cannot be based on these findings alone because the same anatomic abnormalities may occur in individuals who have either testes, ovotestes, or ovaries.

TABLE I. DIFFERENTIAL DIAGNOSIS OF ADRENAL HYPERPLASIA AND TUMOR IN FEMALE PATIENTS

	Abnormality of Embryonic Sex Differentiation	Evidence of Excessive Androgen			
		Increased 17-KS	Excessive Growth and Osseous Development	Precocious Sexual Hair	Response of 17-KS to Cortisone
Congenital adrenal hyperplasia (female pseudohermaphroditism)	Hypertrophied clitoris Persistent urogenital sinus (usually)	+	+	+	+
Genetic intersexes with testes, ovotestes, or ovaries	Various abnormalities (including the above)	0	0	0	0
Postnatal Adrenal tumor	Normal at birth later virilization and hirsutism	+	+	+	0
Adrenal hyperplasia	Same	+	+	+	+
Constitutional hirsutism or "premature pubarche"	None	0 or + or −	0	+ −	0

As shown in Table I (from Wilkins) congenital adrenal hyperplasia is accompanied by increased 17 ketosteroids and other evidence of excessive androgens while genetic intersex (true hermaphroditism) is not accompanied by increase of urinary 17 ketosteroids or other evidence of excessive androgen output.

Clinical Management

Proper management of female pseudohermaphroditism will be dictated by the age of the patient when the anomaly is clinically recognized. In this connection, in the cases of newborns *immediate* determination of the true sex is of paramount importance.

By endocrine therapy the true female may be put on the road to development of normal female secondary sex characteristics, the genital anomaly may be surgically corrected, and life in keeping with the true sex may be made possible.

If the adrenal genital syndrome is not arrested by endocrine therapy and the individual is allowed to develop male secondary sex characteristics, male conduct, identification as a male and male relationship to environment the process cannot be reversed. In this event, the true female must be allowed to follow the male life dictated by her endocrine anomaly with benefit of what help surgery can give: removal of uterus, tubes, ovaries, correction of hypospadias, implantation of plastic spheres in the labia (scrotum) and all else which may help the masquerade. Most important of all, when possible, she should be kept ignorant of the masquerade.

When this anomaly is suspected from appearance of the external genitalia of a newborn the true sex may be readily determined.

The work of Moore[4] on sex determination by skin biopsy and that of Greenblatt[5] by oral mucosal smears has made this early accurate diagnosis possible. No longer is exploratory laparotomy necessary.

From examination of skin biopsies from fifty females and fifty males of normal sexual development a difference in nuclear structures according to sex was demonstrated in cells of the malpigian layer of the epidermis. Nuclei of specimens from females contained a mass of sex chromatin which was seldom seen in the nuclei of specimens from males. The XX chromasomes of the female produce a chromatin mass sufficiently large to be identified while the XY chromosomes of the male fail to produce a chromatin mass of sufficient size to be distinguished from the general particulate chromatin.

This method of detecting the chromosomal sex of an individual was applied to two cases of hermaphroditism. One case proved to be a chromosomal female and the other a chromosomal male. Correctness of these histological diagnoses was verified by later developments and findings.

The same principles are used in determining

the genetic sex by histologic examination of scrapings of the oral buccal mucosa.

At present, examination of peripheral blood smears promises to be of value in determination of true sex.

Female pseudohermaphroditism in a high proportion of cases is the result of progressive androgenic overactivity of the adrenal gland during and after fetal life. This influence, in contrast with genetic, developmental or maternal influences in the case of other forms of pseudohermaphroditism, will continue to act after the period of fetal development. Progressive masculinization after birth can, therefore, be expected in these individuals. A female pseudohermaphrodite can be surgically and psychologically treated beginning in infancy with the result of fitting her to a female way of life, but she will have and will continue to have in some degree the secondary sex characteristics of a male: deep voice, masculine physique, beard, hairy body, and receding hair line of scalp. Because of these progressive changes which at present are irreversible by surgical or hormonal means she will be accepted neither as a male, nor a female.

Inevitable progression of masculinization disputes the thesis that all pseudohermaphrodites should be treated according to their gonadal sex.

At the age of approximately two or three years four criteria will allow determination of the degree to which masculinization has progressed.

They are (1) advance of bone age, (2) increased size of phallus (clitoris), (3) hirsutism and (4) elevation of 17-ketosteroid excretion.

Depending upon the degree of masculinization present, decision must be made as to the direction of clinical management—whether the child is to be a masculinized female or whether the child is to be a sterile male with ovaries. Even though it seems preferable to raise the child as a female, clitoridectomy should be deferred until puberty to be certain that the factors favoring ultimate feminization will still be present. Partial adrenalectomy and estrogen therapy have not been particularly useful in inhibiting masculinization or in effecting feminization. Cortisone is promising as an agent to suppress excessive androgen production and to allow feminization.

Cortisone may be of use in children treated before masculine social and psychologic attitudes are established and could be especially useful in children already raised as females. In children coming under care after masculine social and psychological trends are established, surgical measures to provide as nearly as possible male anatomy should be undertaken: correction of hypospadias, removal of internal female sex organs and implantation of testicular prostheses.

Case Report

H. B., Jr., was first seen in October, 1943, at the age of three and one half years. The child was referred by his family physician with a diagnosis of hypospadias and undescended testicles. The penis was abnormally short with the typical ventral curvature accompanying hypospadias. The penis and glans penis were of normal size for a child of this age. The prepuce was adherent to the glans. The ectopic urethral meatus was at the penoscrotal junction. The scrotum was undeveloped and neither testicle was palpable in the scrotum or inguinal canal. The diagnosis was hypospadias with bilateral cryptorchidism. The parents were advised that surgical correction of the hypospadias should be postponed until age twelve and that endocrine therapy should be tried before considering surgical correction of cryptorchidism.

The patient was not seen again until June, 1951, at the age of eleven years. The parents thought that there had been normal development but that the child, which had been raised as a boy, was larger and more robust than in proportion to his eleven-year-old contemporaries. Examination now revealed abundant pubic hair with male distribution of hair extending up toward the abdomen. Neither testicle was palpable in the scrotum or inguinal region. There was a well-marked ventral curvature of the penis. In August, 1951, a first stage plastic operation for correction of ventral curvature was carried out. The result of this operation appeared good and the patient was not seen again until December, 1952. The penis was well developed and straight. An inlay tube graft construction of urethra for hypospadias was carried out in June, 1954. Plastic operation was carried out for anastomosis of the proximal portion of the urethra with the distal portion in May, 1955.

The patient returned in December, 1955, at the age of fifteen years for closure of the urethrocutaneous fistula and orchidopexy. The parents now reported that the child from age seven had been larger than his class mates and had dominated them but that since age twelve he had stopped growing. He had been taller than his class mates but was now shorter. At age ten or eleven this child had developed an interest in girls and sports. At age fifteen there had been an onset of monthly hematuria of one day's duration.

On December 27, 1955, two small urethro-cutaneous fistulae were closed and a left inguinal incision was made to carry out a left orchidopexy. Examination of the left inguinal region revealed no left testicle. The incision was then lengthened upward and the retroperitoneal space at a higher level was widely opened but still no testicle was found. The peritoneal cavity was then

opened and examination revealed two ovaries, two fallopian tubes, and a uterus. The left kidney and adrenal were exposed and appeared normal. The right kidney and adrenal were palpated and felt normal. Biopsy was taken from the ovarian structures. Histologic examination showed ovarion tissue on both sides. Now for the first time the correct diagnosis of female pseudohermaphroditism was made.



Fig. 1.

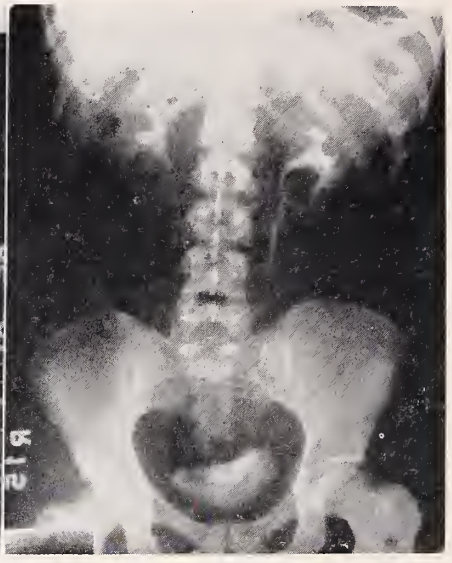


Fig. 2.

Review of the laboratory work of the previous admissions showed normal hemoglobin, white count, differential and urinalysis. Review of the history revealed the patient had had hormonal therapy on several occasions—the last at age twelve years—in an unsuccessful attempt to produce descent of the testicles. Postoperative determination of the urinary 17 ketosteroids was 64 mgm in twenty-four hours. Blood pressure on all admissions varied between 110 and 130/80. Post-operative x-ray examination of the left upper and lower extremities including the shoulder, elbow, wrist, hip, knee, ankle, and foot showed that all the epiphyses were closed and appeared to have been closed for some time. The radiologist stated the patient had a bone age of twenty years or more.

A cysto-urethrogram was unsuccessful because the contrast medium leaked out through the urethrocutaneous fistula. A catheter was passed through the urethra and injected with contrast medium. This radiograph showed the catheter had been inserted through the urethra into a cavity measuring about 3.5 x 9 cm. This cavity was smooth in contour and represented a vagina. Above this cavity was a collection of contrast medium which formed the characteristic shape of a uterus. The conclusion was that there was a long smooth cavity which represented a vaginal wall filled with contrast medium and a normal appearing uterine cavity attached to the upper end of the vagina (Fig. 1).

The following day excretory urograms were made which showed normal kidneys, ureters, and bladder (Fig. 2).

The patient was then seen in consultation by Dr. B. J. Kennedy of the Department of Internal Medicine, University of Minnesota Medical School. It was Dr. Kennedy's opinion that "this patient is genetically female with an adrenal genital syndrome. The patient has hyperfunctioning adrenal glands though they are within normal limits of size and I do not believe there is an adenoma of the adrenals present. As a result of the high androgen level from the hyperfunctioning adrenal, the male characteristics have predominated in that there is hirsutism, hoarseness, large clitoris, muscular development and sexual aggression towards females. He is socially adjusted as a male. The high androgen level has also stimulated his early bone growth but subsequently has resulted in complete fusion of the epiphyses. Hence, no further growth is potentially present. At the present time it would be unwise to attempt to convert this patient to the genetic female. Though this would be extremely easy to do the patient would be unable to adjust to the change of sex, and psychiatric implications would be tremendous. It would therefore seem best for the patient to have the uterus, ovaries, tubes, and vagina removed. I do not believe, however, that it is necessary to treat the adrenal status at the present time. It would be wise, however, to follow him in the future, regarding this, since a few cases of adrenal genital syndrome have a complication of partial adrenal insufficiency, though the adrenal is also producing huge amounts of a single hormone." Dr. Kennedy also added, "in an attempt to improve his masculine status I would suggest that at the time of removal of the female organs plastic testes be inserted in the labia to simulate true testicles."

The entire situation was then discussed with the patient's family and they felt that it would be impossible to have this child who had been brought up as a male now suddenly changed to a female. It was decided this patient would return at a later date for removal of the uterus, ovaries and tubes.

The patient returned in March, 1956. The urinary 17 ketosteroids were 54 mgms per twenty-four hours.

On March 25, 1956, cysto-urethroscopic examination was carried out. This showed the vaginal opening on the floor of the urethra about 2 or 3 centimeters in front of the vesical neck. The vesical neck and bladder were normal. Following the cysto-urethroscopic examination a bilateral salpingo-oöphorectomy, total abdominal hysterectomy and partial abdominal vaginectomy were carried out. The patient had an uneventful postoperative course and was discharged from the hospital on April 2, 1956. Histologic examination of tissue removed showed—uterus with atrophic endometrium, vascular ovaries, and tubes.

The last hospital admission for this patient was in April, 1957. At this time, testicular prosthesis in the form of lucite spheres were implanted in the scrotum. The urinary 17 ketosteroids on this admission were 86 as compared with 64 on the original admission. The patient has gotten along well and seems to be well fitted as a male.

Figure 3 is a full length picture of the patient as he appears today.

Discussion

Much work has been done on the treatment of patients with the adrenal genital syndrome. Adrenal surgery with resection of one adrenal and a large portion of the second adrenal has been of little benefit. The administration of estrogens to female pseudohermaphrodites may cause breast development and its withdrawal frequently leads to uterine bleeding but it does not decrease the hirsutism or check the virilization. It is now generally agreed that the use of cortisone as described by Wilkins is the best treatment in individuals with female pseudohermaphroditism.

Hodges[6] discussed the surgical and hormonal therapy of benign and malignant adrenogenic hyperfunction of the adrenal cortex and felt that hormonal therapy with cortisone was more effective than surgical extirpation of portions of the adrenal glands in controlling the adrenogenital syndrome due to benign hyperplasia of the adrenal cortex. He found that the elevated urinary 17 ketosteroids were promptly reduced toward normal levels. However, the cortisone therapy was ineffective in attempting to suppress metastasis from an adrenocortical carcinoma in a patient exhibiting the adrenogenital syndrome. He felt that the contrasting effect of cortisone on urinary 17-ketosteroid excretion in benign versus malignant hyperfunction of the adrenogenic elements of the adrenal cortex could be used as a means of differentiation.

As mentioned earlier, recent work has done much to clear up the confusing situation in regard to the adrenogenital syndrome. However, numerous cases have not been recognized early in life and have thus caused many problems in the management of this condition in later life. Frank



Fig. 3.

Hinman, Jr.,[7,8] was faced with the problem of reversing the sex of two female pseudohermaphrodites with adrenal cortical hyperplasia by plastic repair of the phallus (clitoris). A detailed study of the previous experiences of others with the course of this disease was made and the literature reviewed before these operations were carried out. Two children reported by Hinman were made boys because it was felt advisable that these children should be reared in the sex in which each would best fit physically, socially, and psychologically. The records of 149 patients reported in the

literatuure were reviewed and tabulated. Fifty-three of these patients were reported after the age of fifteen and the remainder were reported before the patient reached the age of fifteen. Of the fifty-three patients over fifteen years of age fourteen were considered to be male at birth but two were later "feminized" by clitoridectomy. The remaining thirty-nine were reared as females but four became so masculinized that it was later decided to regard them as males. Many were adjusted poorly to their environment because of their masculine physical characteristics. Hinman felt that since clitoredectomy was irreversible perhaps it had best be reserved until puberty for patients who must take suppressive doses of cortisone indefinitely. He also felt that the decision as to sex in these individuals should rest on the degree and progression or suppression of masculinization, since social and psychological patterns will follow the arbitrary environmental sex.

Prior to the use of cortisone, it was impossible to check the progressive virilization and excessive growth which occurred in cases of female pseudohermaphroditism. It is now known that cortisone will suppress the abnormal adrenal activity as shown by the decrease in the urinary 17 ketosteroids. However, when this drug is stopped the 17 ketosteroids will rise to the previously high level.

Wilkins reports that relatively small doses of cortisone are effective in suppressing the excessive secretion of adrenal androgens without causing abnormal metabolic or toxic effects. However, the minimum maintenance dose of intramuscular or oral cortisone must be determined in each case by following the urinary 17 ketosteroids and the rate of somatic growth and development. In female pseudohermaphrodites who have reached a level of somatic development comparable to that of puberty—bone age of eleven years or greater —suppression of the adrenal hyperactivity with cortisone results promptly in normal adolescent sexual development. In more mature individuals progressive virilization is checked. With proper doses of cortisone, somatic growth and development proceed normally, but excessive doses may inhibit them. Wilkins has also shown that after treatment with cortisone for one or two years its omission for two or three months permits a partial return of the adrenal hyperactivity but the 17 ketosteroids do not increase to as high a level as before treatment. Whether or not prolonged use of cortisone in female pseudohermaphrodites will be successful is impossible to say at this time. A large series of cases with long followup studies will be necessary before any unbiased statement can be made.

Summary

In summary, we have presented a case of female pseudohermaphroditism not recognized until age fifteen. This child was actually a female but had been raised a male. It was felt that from the psychological standpoint it would have been castastrophic to alter the sex. In retrospect, exploratory laparotomy carried out when patient was first seen in 1943 at the age of three and one-half years would have given the correct diagnosis and in all probability simplified many of the problems of treatment which arose when the correct diagnosis was made.

The work of Wilkins and the recent reports on sex determination by skin biopsies and by oral mucosa smears which has made an early accurate diagnosis possible—especially in new born infants whose true sex is doubtful at birth—has been discussed. The experiences of other authors in clinical management of pseudohermaphroditism has been presented. No longer is exploratory laparotomy necessary to confirm the diagnosis.

It will be of great interest to follow this "boy" and see how he fits into the pattern of social life as he grows older and also determine whether or not any adrenal insufficiency will develop in the future.

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Changes in the Skin Related to Pregnancy

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THE PREGNANT woman is subject to all the eruptions of the skin that occur in the nonpregnant woman, as well as to certain physiologic changes in the skin that are exclusive with pregnancy. Crawford and Leeper[1] reviewed the dermatologic conditions present in a series of 181 women (239 pregnancies), among whom 206 disturbances of the skin occurred. In some instances, a woman had several conditions; in others, the same diagnosis had been recorded during several pregnancies. With elimination of these duplications, there remained 182 dermatologic diagnoses. A total of 49,254 deliveries had occurred at the hospital during the same period, indicating that 0.37 per cent of these pregnant patients had dermatologic complaints.

From the best available records, it is estimated that approximately 5 per cent of patients seen in general practice have a chief complaint in the field of dermatology; this is actually 13.5 times the incidence of cutaneous eruptions recorded among the afore-mentioned pregnant patients. Thus, one might conclude that pregnant women are less susceptible to lesions of the skin than are nonpregnant women. Certainly, with reasonable conservatism, it might be said that pregnant women are no more affected by cutaneous diseases than is the general population.

The most logical way to approach this discussion is to consider first the physiologic changes manifesting themselves in the skin and mucous membranes during pregnancy and then to consider the pathologic changes of most interest during pregnancy (see table).

Physiologic Changes

Violaceous Discoloration of Vaginal Membranes.—This change is known as Chadwick's sign. The mucosa about the vaginal opening frequently takes on a dark-bluish or purplish congested appearance.

Striae Distensae.—The skin is subjected to considerable tension during pregnancy, resulting in rupture of the elastic fibers of the reticular stratum of the cutis, with the formation of depressions known as striae of pregnancy. In primiparae, these present a pinkish or slightly bluish appearance. Two varieties are observed in multiparae; some resemble those in primiparous women and are caused by the current pregnancy, while others present a glistening silvery appearance, representing previous pregnancies. These striae rarely disappear completely after delivery.

TABLE I. CHANGES IN THE SKIN RELATED TO PREGNANCY

Physiologic Changes
Violaceous discoloration of the vagina (Chadwick's sign)
Striae distensae
Enlargement and pigmentation of the breasts
Chloasma (mask of pregnancy)
Gingival proliferation
Molluscum gravidarum
Palmar erythema
Hypertrichosis
Vasomotor instability
Nevus araneus
Pathologic Changes
Herpes gestationis
Impetigo herpetiformis
Prurigo gestationis
Atopic dermatitis
Pityriasis rosea
Erythema multiforme
Lupus erythematosus
Miliaria and intertrigo
Rubella
Pyoderma faciale—acne vulgaris
Herpes simplex
Vulvitis
Tumors
Verrucae
Pigmented nevi
Hemangio-endothelioma
Neurofibromatosis

Enlargement and Pigmentation of the Breast.—Under the influence of pregnancy, pronounced changes occur in the breasts. After the second month, a delicate tracery of bluish veins appears just beneath the skin. The nipples become larger and deeply pigmented, and the areola surrounding the nipple becomes considerably broader and much more deeply pigmented, the degree of pigmenta-

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tion varying with the complexion of the woman. In blondes, the areolae and nipples become pink, whereas they become dark brown and occasionally almost black in brunettes. If the breasts greatly



Fig. 1. Epulis gravidarum; note the dark-red, easily bleeding tumefactions.

enlarge, the skin frequently presents striations similar to those observed on the abdomen. The same degree of hyperpigmentation often is found in the linea alba (which then becomes the linea nigra), the genitals, the umbilicus and axillae, as well as around the anus and in surgical scars. All these pigmentary changes increase as pregnancy progresses and tend to disappear shortly after labor. However, the lighter shades found before pregnancy never return.[2]

Chloasma.—This condition is characterized by irregularly shaped, brown macules of various sizes that sometimes appear on the face, neck and trunk during pregnancy. When the lesions occur on the face, the condition is called the "mask of pregnancy." The exact cause is unknown. These patches nearly always disappear shortly after delivery but tend to reappear during subsequent pregnancies and may become permanent zones of pigmentation after several pregnancies.[3]

Gingival Proliferation.—Certain structures of the oral cavity appear to be adversely affected during pregnancy. Dental caries, odontitis and proliferative changes of the gingivae are among those conditions considered by some observers to be attributable to it. Full agreement, however, does not exist in this regard. The adventitious changes are acceptable as those of pregnancy, but dental caries and odontitis have been controversial issues.

The commonest adventitious change is marginal gingivitis. Generally, the lower gums are most frequently and most severely involved. This disturbance appears about the fourth month of pregnancy, usually when the mammary changes become evident. At first, the gingivae are somewhat edematous. Hyperemia soon causes more extensive changes, adding color changes to the swelling. The gum becomes progressively darker red until a dark reddish-blue tinge is attained; it bleeds easily, either spontaneously or from minor injury. This change often is termed "gingivitis gravidarum." It persists throughout pregnancy and lasts one or two months after delivery.

Under the term "pregnancy tumor" or "epulis gravidarum," a hemorrhagic proliferative change arising from the interdental gingival structures has been noted by a number of observers. This tumefaction is indistinguishable from epulis in both clinical appearance and microscopic picture. Dark-red, oval or rounded, easily bleeding tumefactions appear in pregnant women past the third month and continue to enlarge while pregnancy lasts (Fig. 1). They recede shortly after parturition.[2] These proliferative changes usually recur in subsequent pregnancies.

Molluscum Gravidarum.—Pinhead to pea-sized pedunculated small tags confined almost exclusively to the mammary region and thorax may develop during the latter months of pregnancy; they disappear partially or completely after parturition. These lesions also are seen on the sides and front of the neck. They are thought to be produced by gonadotropic hormones acting as an ectodermal stimulus. They resemble benign papillomas microscopically but have been likened to some of the pedunculated tumors found in neurofibromatosis.[2]

Palmar Erythema.—The erythema appears gradually and involves most of both palms, or it may involve the thenar and hypothenar eminences of the finger tips alone. It usually begins during the first six weeks to three months of pregnancy, reaches maximal intensity in a few weeks and then remains unchanged until after delivery. It usually recurs during succeeding pregnancies.

Hypertrichosis.—The growth of hair on the face and midline of the abdomen may increase in pregnancy.[4] This usually recedes when pregnancy

is terminated, but it is not possible to assure the patient that the problem will not persist.

Vasomotor Instability.—During pregnancy, the peripheral circulation has a tendency toward vasomotor instability. Dermographia alba or rubra occurs in about 75 per cent of patients. Increased tissue permeability is present, with occasional edema of the face and extremities. The capillary loops in the skin increase in size after the second month but return to normal shortly after the termination of pregnancy.[4]

Nevus Araneus.—Spider or stellate superficial red vascular nevi are a common accompaniment of pregnancy. They occur as superficial discrete telangiectatic lesions on the face, neck or trunk, without symptoms;[4] they consist of central elevated red dots from which fine blood vessels radiate like spokes from a wheel. They are believed to be due to increased production of estrogen during pregnancy and are frequently found in association with hepatic disease, such as cirrhosis. They occur in two thirds of white women and 11 per cent of Negro women during pregnancy and usually disappear following parturition.[5]

Pathologic Changes

Herpes Gestationis.—This condition is considered by most authorities as the only dermatologic disease peculiar to pregnancy. It may be considered synonymous with dermatitis herpetiformis in pregnancy, and it is the most severe of all the dermatoses of pregnancy. It occurs at about the fifth month of pregnancy and sometimes in the postpartum period. The disease may clear within two months after delivery, but it can recur with greater severity and at an earlier time in succeeding pregnancies.

Herpes gestationis is characterized by grouped vesicles and bullae on an erythematous urticarial base. At times only urticarial lesions are present for long periods. Lesions usually appear first in the umbilical region, accompanied by intense burning and itching; later, the groins, flanks, breasts, thighs and extensor aspects of the forearms are affected (Fig. 2). The symmetric distribution of dermatitis herpetiformis is followed. The lesions also may be found on the mucous membranes, but as a rule these surfaces are spared. The lesions may leave a small pigmented scar when they heal.[4] Eosinophilia is present in the blood and blister fluid, but the count of eosinophils rarely exceeds 10 per cent in the former.

Many miscarriages, stillbirths and monstrosities have been reported as associated with this condition. Keaty and co-workers[6] reported on ten patients with herpes gestationis who were seen in the early stages of the disease when the symptoms were those of localized or generalized pruritus. In twenty previous pregnancies in this group, there had been a 30 per cent fetal mortality and one premature infant, and the dermatosis had appeared in each of these previous pregnancies. Of these ten patients, five had moderate to severe edema of the ankles and four had albuminuria. Persistent headache, hematuria and hypertension appeared in three. The blood levels of chorionic gonadotropin were abnormally high in seven patients, averaging 3125 rat units per 100 ml. (normal is 500 to 750 units). Since an excess of chorionic gonadotropin in the later stages of pregnancy is associated with decreased production of progesterone, substitution therapy with progesterone was used; doses of 100 mg. were given intramuscularly each day. All ten pregnancies termi-



Fig. 2. Herpes gestationis of the more severe bullous form.

nated in living normal infants. In our experience, use of sulfapyridine (enteric coated) or cortisone, if required, adequately controls the eruption, with safety to mother and child.

Impetigo Herpetiformis.—This is a serious disease that usually occurs in pregnant women or in the puerperal period. However, it has occurred in nonpregnant women and in men. Some clinicians have stated that this entity does not exist. The eruptive manifestations usually begin in the groin, or on the inner surface of the thighs, about the umbilicus, over the breasts and in the axillae. From these regions, the eruption spreads over other cutaneous surfaces. The early lesions are pinhead-sized (rarely larger) pustules grouped on an erythematous base. The pustules are opaque or greenish yellow and soon become covered with a dirty brown crust, beneath which the epidermis is re-formed; sometimes the surface remains red and infiltrated, and it exudes serum. The process extends by the development of new pustules in a circinate manner about the original patch. Several rings thus may be formed. By coalescence of these peripherally spreading rings from different foci, large portions or the entire cutaneous surface may become affected. After some months, when the eruption has become extensive, the skin is swollen, covered with crusts, and presents excoriated and fissured regions with irregularly disseminated circles of pustules. The mucous membranes of the mouth and throat and occasionally the esophagus participate in the process. Well-defined grayish patches with depressed centers are seen, together with erosions, which mark the site of previous pustules. Constitutional symptoms are always present and, as the disease progresses, may become grave. Fever may be continuous or intermittent. Chills and high temperatures mark each new extension of the disease. Vomiting, diarrhea and delirium occur. Bacteriologic examination of the cutaneous lesions and the blood usually gives normal results.

From 1931 through 1951, a total of fifty-six cases of this disease were reported in the literature. Of these patients, twenty-four had typical hypoparathyroidism.[7] The disease, as a rule, does not lead to abortion or premature labor and has no effect on the fetus.

Impetigo herpetiformis had a mortality rate of 75 per cent before the advent of antibiotics. The elimination of secondary infection through the use of antibiotic agents has made death due to this condition rare.

Prurigo Gestationis.—This is a generalized neurodermatitis seen during pregnancy. It has been considered as a form of atopic dermatitis by some authors. It produces generalized pruritus and becomes fully developed in the latter months of pregnancy. It is characterized by discrete pinhead to lentil-sized, severely crusted papules with an adherent bloody crust, the scratch papule. The lesions are fairly close together, depending on the duration and severity of the eruption. Characteristically, they are confined to the extensor surfaces of the arms, forearms, hands, thighs, legs and feet; when the disease is severe, the shoulders, scapular regions and thorax also are affected. The onset is gradual and the condition persists to parturition, when it promptly disappears, leaving small pigmented scars.[4] Vesicles and bullae never occur as they do in herpes gestationis. This disease does not lead to abortion or premature labor and has no effect on the fetus.

Atopic Dermatitis.—This is a characteristic form of dermatitis that differs from the purely local type in that an associated constitutional involvement, particularly of the nervous system, and also a high degree of hypersensitivity to proteins are present. Manifestations of allergy, such as hay fever, asthma, rhinitis and urticaria, often are associated; furthermore, it presents hereditary aspects in that various signs of allergy may be found in the immediate family.

This disease is characterized by a group of cutaneous symptoms, chief of which are those of lichenification, which is found most commonly on the flexor aspects of the cubital and popliteal spaces, and the sides and back of the neck. These symptoms are supplemented during acute exacerbations by other characteristic symptoms of eczema, including erythema, edema, weeping, excoriations, fissuring and crusting, together with itching, which is often intense.

This is one of the conditions that is definitely aggravated in a large percentage of cases by pregnancy. Statistics in the literature vary widely, but all authorities are in agreement that aggravation does occur and that delivery usually brings about rapid improvement. A neurogenic or neuropsy-

chiatric factor often is involved. Patients who have atopic dermatitis are usually intelligent and have driving personalities, tending to do more and to drive themselves harder than the average person does. The physical and mental exhaustion in such patients frequently aggravates the dermatitis.[8]

Pityriasis Rosea.—Hill[4] stated that this condition is more common during pregnancy than it is at other times. This impression is upheld by other authorities, although statistics are not available. It is an acute, self-limited eruptive disease that is characterized by superficial scaling patches of varying size, usually round, oval or circinate in outline, having a pale-red hue, with often a fawn-colored center, and situated chiefly on the trunk. The primary lesion often may be recognized as the largest, most conspicuous, and most brilliant in hue of all the patches. Instead of being raised, the lesion may be either on a level with the general surface or slightly depressed. The patches are dry and covered with rather adherent scales. The long axis of the lesion usually corresponds with the lines of cleavage of the skin (Fig. 3).

The causes of this disease are obscure. It is commoner in the spring and autumn than it is in the other seasons. It may be unusually prevalent during a few weeks in a given locality. This, coupled with the fact that two members of the same family occasionally are affected, lends strength to the theory that it may be mildly infective. It is generally a self-limiting disease in which the duration varies greatly in different cases.[8]

Erythema Multiforme.—This condition may occur at any stage of pregnancy or in the early puerperium, and it may disappear only to recur with subsequent pregnancies. It is characterized by intense burning and itching and fever, followed by urticarial patches of irregular size and shape. The extensor aspects of the limbs are usually affected, as is the oral mucosa. In addition to the urticarial lesions, macules, vesicles, bullae, pustules and zones of erythema are also frequently present. The characteristic lesion is the herpes iris; this variety of lesion prompted the adjective "multiforme." The condition is usually self-limited in pregnancy.[8] A relationship of this reaction to herpes simplex has become more prominent in recent years.

Lupus Erythematosus.—This condition is classified into four types: chronic localized discoid, chronic disseminated discoid, subacute disseminated and acute disseminated forms.



Fig. 3. Typical lesions of pityriasis rosea on the neck of a pregnant woman.

It is largely a disease of females, the maximal incidence occurring during the childbearing period. In spite of this, the number of cases complicating pregnancy is relatively small. Survey of the literature reveals that acute disseminated lupus erythematosus had a disastrous effect on the fetus or newborn child in approximately 30 per cent of the cases studied. In the acute stage, approximately 45 per cent of the patients with this disease became worse or died during pregnancy. In the subacute type associated with pregnancy, no constant effect was noted on the lupus erythematosus; however, 46 per cent of these patients aborted. In chronic discoid lupus erythematosus associated with pregnancy, practically no ill effects on the pregnant patient were noted.

The question then arises as to whether a patient who has lupus erythematosus should be advised against pregnancy. If the disease is subacute or chronic, the mother usually will go through pregnancy uneventfully, although the prognosis for the fetus is relatively poor in the subacute disseminated stage, as already noted. In the acute dis-

seminated type, because of the seriousness of the disease, it is doubtful if the risk for the mother or the child is advisable. Wellborn and Warden[9] suggested that therapeutic abortion could be justifiable in the systemic form of the disease in which myocarditis, severe renal involvement or psychosis is present.

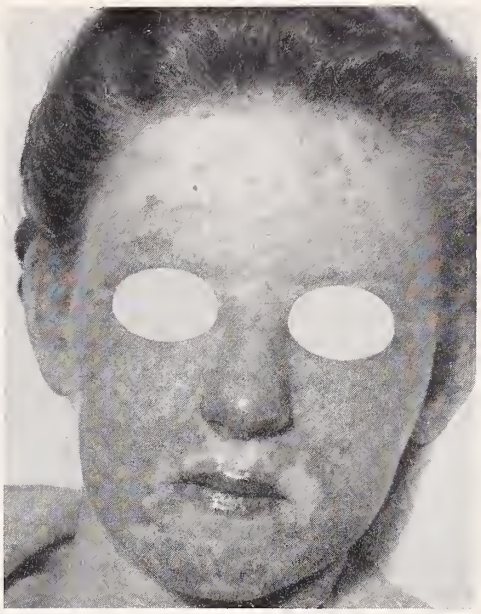


Fig. 4. Typical facies in acute systemic lupus erythematosus.

In the discoid variety of lupus erythematosus, the early stage is manifested by one or several bean-sized, slightly elevated, reddish macules that do not entirely fade under pressure and are covered with an adherent scale. The primary lesion enlarges peripherally and is well defined in outline; its color varies with the acuteness and type of the disease from rosy pink to deep purple. The shape is usually circular or oval. The border is firm, red and distinctly elevated. The lesions may spread symmetrically over the nose and cheeks in a form that has been likened to the open wings of a butterfly. As the borders advance, the center not infrequently undergoes involution, becoming paler and less elevated; it may show typical scars even while the outer rim is actively progressing.

In the primary acute disseminated type, the cutaneous lesions begin as erythematous patches on the face that coalesce and cover the cheeks, nose, eyelids and ears (Fig. 4). The face is edematous and swollen, and in some cases crusting occurs early. The eruption involves the hands and may extend over other regions. On the hands, it may be erythematous, papular or purpuric; on other portions of the body, the eruption is multiform. Involvement of the finger tips is a characteristic feature. Bullae, vesicles, scaling patches, crusted lesions, hemorrhagic lesions and generalized telangiectasia have been described. When the acute disseminated type develops from the chronic discoid form, the lesions on the face become acutely inflamed and new lesions develop elsewhere.

In the subacute type of lupus erythematosus, the lesions are erythematous scaling patches of varying size. Moderate infiltration is present, and large portions of the body may be involved. However, the lesions tend to be limited to the exposed surfaces, including the V of the neck. These lesions may undergo involution without atrophy, or varying degrees of atrophy and telangiectasia may occur. The use of antimalarial drugs has revolutionized the clinical management of these patients.

Miliaria.—This rash usually occurs during the third trimester of pregnancy and is characterized by pinpoint, raised, red papules that sometimes have a vesicular top. They are discrete and occur chiefly on the abdomen, buttocks and thighs. They are considered to be due to the excessive sweating of pregnancy, with blocking of sweat ducts by hyperkeratinization. The rubbing of lanolin into the area assists in unplugging the sweat ducts.[4] This condition is prevalent in summer and in the tropics.

Intertrigo.—This eruption frequently occurs in the fold of the groin, abdominal folds and under the breasts as a glazed, red plaque. It may be complicated by fissuring and bacterial or monilial infection.[4] It is a hyperemic condition of those cutaneous and mucocutaneous surfaces which are in constant apposition and between which there are hypersecretion and retention of sweat. It is usually found in the third trimester of pregnancy.

Rubella (German Measles).—This is an acute contagious disease characterized by a macular eruption and mild constitutional symptoms. The time of incubation is variable and usually extends over a period of one to three weeks. Mild prodromal symptoms consisting of malaise, headache

and moderate fever may precede the eruption by a few hours or a day. The rash spreads rapidly and reaches its height in 24 to 48 hours, after which it begins to recede. Usually it is most pronounced on the face and neck, with the trunk and extremities exhibiting fewer lesions.

The palms and soles often share in the eruptive process. After 24 to 48 hours, the eruption undergoes involution, which is accompanied by furfuraceous desquamation and is finished by the fourth or fifth day. The posterior cervical lymph nodes are enlarged, which is of great diagnostic importance. Other lymph nodes also may be enlarged.

The serious effect of German measles on the fetus *in utero* when the disease is contracted in the first trimester of pregnancy is well known. Children born of mothers who have had German measles during pregnancy have demonstrated congenital cataracts, deaf-mutism, congenital dental abnormalities, mental defectiveness, glaucoma, microcephaly, harelip, cleft palate and rudimentary ears. However, fetal deformities may be encountered in other diseases, such as mumps, herpes zoster, scarlet fever, varicella, influenza, hepatitis and poliomyelitis, most of which are viral in nature, as is rubella. Rubella is most likely to be confused with measles and scarlatina. The rash is essentially the same in rubella as in measles, but rubella is distinguished by a more variable period of incubation, a shorter period of invasion, less severe catarrhal symptoms and, especially, by more pronounced involvement of lymph nodes. Scarlatina is marked by severe general symptoms and signs, including fever, nausea, vomiting, headache and leukocytosis.

Pyoderma Faciale-Acne Vulgaris.—This condition is frequently produced or aggravated during pregnancy. Comedones, papules and pustules are formed. The shoulders and back are involved most frequently. The papules usually become much larger than they are in the nonpregnant state and are hard and reddish blue. The flare-up usually begins at about the third month.

Herpes Simplex.—This is an acute eruptive disorder characterized by the appearance of grouped vesicles on a mildly inflammatory base, accompanied by sensations of heat and burning, and usually occurring about the face and genitalia. It is more common during pregnancy than at other times and tends to recur during individual pregnancies and at subsequent pregnancies. It is a simple disease, usually completing its evolution within one week. The lesions occur most commonly about the lips and nose, appearing less frequently on other portions of the face. During pregnancy, they frequently occur in the genital region, on the hood of the clitoris, the labia minora and the inner surface of the labia majora or adjacent surfaces. The lesions here are preceded by itching and the sensation of heat and, rarely, by pain, which is followed by the appearance of one or several pinhead-sized vesicles situated on a hyperemic base. Considerable edema of the prepuce or labia minora may result. The disease occurs as the result of irritation or inflammation of the peripheral nerves induced by various agents. This disease is transmissible by contact, and the husband is frequently infected. Herpes simplex is a self-limited disorder and, except for recurrence, is not serious.[8]

Vulvitis.—Two such conditions stand out as important during pregnancy. These are moniliasis and trichomoniasis.

Moniliasis.—The first symptoms in moniliasis are itching, burning and smarting of the lower part of the vagina and the vulva. Inflammatory changes occur in the vagina, and intertriginous lesions are found between the buttocks and over the anterior portion of the crural folds. These lesions consist of a thin overhanging fringe of somewhat lacerated whitish epidermis forming polycyclic borders about pink moist areas. Excoriations occur later and, as a result of scratching and other trauma, dry lichenified zones replace the more superficial lesions. The mucous membrane between the labia and clitoris becomes thickened and white. Fissures and whitened areas also occur about the anus.[2]

Trichomoniasis.—This condition also becomes exacerbated during pregnancy. All of its symptoms, including the characteristic itching and burning, become exaggerated. The presence of various-sized, strawberry-red, granular lesions on the inner surface of the labia minora should make one suspicious of the presence of this infection.[2]

Tumors.—

Verrucae.—Warts frequently proliferate and increase in numbers during pregnancy, most often

during or after the second trimester. This applies also to venereal warts, which can be excited by the more profuse discharge about the vulva producing a more alkaline skin flora that is conducive to the proliferation of these lesions (Fig. 5).



Fig. 5. Verrucae (condyloma acuminatum).

Pigmented Nevi. — During pregnancy, small pigmented moles are likely to appear. Usually they are flat and are brown or dark, ordinarily being of the simple innocuous variety. However, if any flat, pigmented, brown mole, especially one situated about the toes, fingers, or genital regions, shows signs of increasing pigmentation, ulceration or crusting, increase in size or the presence of satellite lesions, suspicion of malignancy may be entertained, because pregnancy is a stimulus to melanocarcinoma.

Hemangio-endotheliomas. — Pre-existing lesions may enlarge or these benign tumors may occur for the first time during pregnancy. They commonly appear as single, red, vascular, warty growths, pinhead to pea-sized, freely movable on the underlying tissues, and with a nevoid dilation of the surrounding veins. The sites of predilection are the middle vertical third of the face, about the eyes and, less frequently, on the breasts and umbilical region. Histologically, these lesions are simple nevi and rarely become malignant, regressing spontaneously after parturition.[4] They also may be found on the external genitalia, and may grow to enormous size. Although rarely malignant, they are considered so when they metastasize.

Neurofibromatosis. — Pregnancy commonly induces an intensified growth of neurofibromatous tumors, with an increase of pigmentation and the development of pain and tenderness in some nodules.[2] This condition often becomes evident for the first time during pregnancy.

Summary and Conclusions

Many physiologic changes occur in the skin during pregnancy about which the physician need not be concerned.

Evidence indicates that not only are pregnant women no more susceptible to dermatologic lesions but they may not even be as susceptible as are nonpregnant women, or men.

The treatment of all dermatologic lesions associated with pregnancy is similar to that in the nongravid female.

Only in herpes gestationis, acute and subacute lupus erythematosus, and rubella need the physician be especially concerned about the mother and the fetus.

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Physical Rehabilitation as Related to Industrial Compensation

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Physical rehabilitation consists of conserving and exploiting the physical capacity remaining to the patient. It starts with the first care given and continues practically indefinitely. Dr. Knapp discusses both some general principles and some specific procedures.

REHABILITATION has been defined as "the restoration of the individual to the highest physical, mental, social and economic level of which he is capable." This definition is an extremely broad one; and as such, includes all of the patient's care from the time of the injury or illness until he returns to employment or becomes a permanent charge upon the community.

It has been stated that the stretcher-bearer is the first member of the rehabilitation team. This is true in the general sense because the method of transfer of the patient from the point of injury to the stretcher may help to determine the end result that will be obtained many months later. For example, clumsy or inexpert handling of a patient with a fracture of the spine may convert a relatively simple case, where the involvement is limited to the bone and recovery can be expected within a few months, into a spinal cord lesion with paralysis below the point of injury which requires long hospitalization with great likelihood that recovery will never be complete.

Following the patient's admission to the hospital a great number of people will participate in his care. These include doctors in various specialties, nurses, laboratory and x-ray technicians, physical and occupational therapists, social workers, psychologists, speech therapists, vocational counselors, teachers, engineers, brace-makers, artificial limb manufacturers and many others depending upon the type of disability presented by the patient.

Each person who participates in the rehabilitation of the patient has his own definition for rehabilitation, however. To the doctor and others concerned with medical care, it is primarily the restoration of the patient to his greatest physical capacity; in other words, his recovery from the injury or illness. To the vocational counselor, it is his restoration to employability. To the social worker it is his return to his rightful place in society. To the psychologist it is the resumption of normal mental and emotional stability. Each of these has an important position in the total rehabilitation of the patient. No one of them alone, however, provides the complete answer.

In the limited sense, physical rehabilitation relates primarily to the specific problems of recovery in those patients who are seriously injured, either by accident or disease. If we follow the course of a disabled individual, we may be able to point out the various phases of rehabilitation.

After the initial injury the patient is taken to a doctor's office or a hospital. The great majority of patients are mildly injured and can be treated satisfactorily there. The laceration can be sutured, for instance, or the fracture reduced and a cast applied and the patient may then recover from his physical disability and return to his previous employment without any further rehabilitation. These patients present no serious problems and recover maximal function through normal activity.

A somewhat more disabled person may require some specialized services, such as physical and occupational therapy. This care may be given in the doctor's office or a hospital department of physical medicine, following the fracture reduction, tendon suture, or nerve suture that has been the definitive care of the patient. A great many of these patients will then return to their previous occupations without any need for further rehabilitation procedures.

A still more disabled patient may require more

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than simple physical medicine for his restoration to the highest level of functional capacity. This may be provided either by the hospital or an outpatient center where the patient's abilities may be evaluated and proper counseling given as to the usefulness of procedures which are not medical. For instance, it may be necessary for the patient to change his occupation. This requires testing of intelligence, vocational aptitudes, vocational interests, and the ability of the patient to meet people and to compete with normal individuals in spite of his handicap. Thus a proper evaluation of his physical, mental, and emotional abilities can be made and a decision reached which will give him the best possibility of returning to full employment and of reaching a high economic level.

The most seriously disabled patient will be unable to reach his ultimate goal with this type of facility. He must enter a total rehabilitation center where in-patient care is available for his severe disability. This type of center should provide complete medical diagnosis with all specialties available, together with evaluation of the patient's ability to carry on strenuous activity without harm to himself. Muscle strength, co-ordination, and endurance testing should be included. In addition to the medical evaluation, further evaluation is performed by the paramedical personnel. Evaluation of his capabilities with regard to his mental and emotional processes is made by the psychologist. If speech problems are present, they can be evaluated by the speech therapist. Testing for vocational interests and manual dexterity should be carried out and a pre-vocational testing unit is useful to determine whether the patient actually can perform the type of work which is being planned for him. An evaluation of the social problems of the patient, his family problems and responsibilities, his economic level, his previous work experience, his home situation, the type of house and its accessibility to a disabled person, what stair climbing is necessary, the location of essential facilities, such as toilet and bedroom, may influence the decision as to the program this patient should have.

Treatment should include not only medical care for the primary problem but special attention to the complications. Joint and muscle contractures, pressure sores, urinary stones, disuse atrophy and other problems arising from prolonged disability not only receive specialized attention and treatment but measures are instituted to prevent their development or recurrence. Treatment facilities for physical, occupational, and speech therapy, gait training, strengthening exercises, stretching of contractures, development of vocational skills, training in the activities of daily living, transfer from wheel chair to bed or automobile, and, for women, instruction and practice in carrying out household activities, such as cleaning and cooking, should be available. All of these procedures should be under close and continuing medical supervision with constant change of prescription to cope with changing conditions in the patient. In other words, a complete and comprehensive evaluation program with adequate treatment for those conditions which can be overcome, but with primary emphasis on complete utilization of what the patient has left to work with, is the aim of rehabilitation.

In contrast with ordinary medical and surgical thinking where we are most interested in what is *wrong* with the patient, in rehabilitation we are concerned primarily with what is *right* with the patient. In other words, we are not so much interested in his *disability* as in his *ability*. This provides a positive approach which frequently allows us to make progress from a seemingly hopeless situation to one which offers self-care and even vocational possibilities. For instance, an engineer who contracted severe poliomyelitis which resulted in complete paralysis below the neck except for a little movement in one foot and who required twenty-four-hour residence in a respirator is supporting his family by abstracting articles of a scientific nature, thus saving the time of other engineers who would otherwise need to spend many hours reading these articles. This was done by making use of what he retained rather than what he had lost. His assets were a good brain, good training in engineering, ability to talk, ability to move his head, and ability to move one foot. All of these were utilized in his rehabilitation. His ability to move his head was made useful by constructing a device so he could turn the pages of a book by a movement of the head. At the same time, a dictaphone was connected so that the movement of his foot would turn the dictaphone on and off. In this manner he was able to abstract articles and dictate his abstracts which were later transcribed by a secretary. This was accomplished in spite of the fact that he could not even breathe by himself.

Rehabilitation Centers

Recently a great deal of interest has been aroused in the subject of rehabilitation and the establishment of rehabilitation centers. This has resulted in some interest on the part of communities and local and federal government in the establishment of these centers. The federal government supplies funds for rehabilitation which are available to local communities on a percentage matching basis. This, of course, is fundamentally a good thing. However, it has resulted in some problems that may do harm to the field of rehabilitation eventually.

Americans are so constituted that when they see an available dollar they want to grab it. Therefore, many hospital administrators planning new facilities have reached for the rehabilitation dollar without much thought as to how this rehabilitation center is going to function. This creates problems. Furthermore, this term "rehabilitation" seems to be required in the title of the service. Therefore, many strange and wonderful things are masquerading under the term "rehabilitation center," some of them not even remotely concerned with rehabilitation.

In general, there are four types of rehabilitation facilities which may be grouped together in various combinations. First, the center may be associated with a general hospital. Second, it may be separate from any hospital facility. Third, it may be strictly an out-patient facility. Fourth, it may be an in-patient facility. There are advantages and disadvantages inherent in each of these types of centers. When the center is associated with a general hospital it has the advantage that other types of general medical and surgical facilities are close at hand and easily obtainable. These include such things as x-ray, operating rooms, laboratory facilities, et cetera. One serious disadvantage is that most hospitals are desperately seeking new beds and frequently the rehabilitation center is looked upon covetously by the other services so that eventually the acute services overflow into the chronic center and it recedes or disappears. The separate center has the advantage that it can maintain its autonomy and there is no fear of its being "gobbled up" by other services. However, it has the disadvantage that it must provide x-ray and laboratory facilities. This can be overcome since these can be installed in the center itself. However, operating room facilities are not usually practical in a rehabilitation center, so this service must be purchased from available hospitals in the vicinity. This is not difficult, however, and does not constitute a real disadvantage. A strictly out-patient facility, in my opinion, does not qualify as a rehabilitation center, since the type of patient which it can handle must be ambulatory or, at least transportable, and therefore is the milder type of patient. An in-patient facility does deserve the title of "rehabilitation center" since it can handle any type of patient, severe or mild, as occasion demands. However, the best combination is an in-patient facility with an out-patient department, thus all phases of patient care can be carried on.

From the administrative point of view, most centers are run according to what is known as "the team concept." This concept means that all of those who participate in the care of the patient are on the team and they all are important, each has his own function and his own part to perform in the care of the patient. But they should all work together for the benefit of the patient. This team consists of numerous parts—the medical side of it usually includes internal medicine, pediatrics where children are treated, physical medicine, orthopedics, neurology, urology, ophthalmology, otolaryngology, psychiatry, general surgery, plastic surgery, and any other medical specialty that may be needed for patient care, depending upon the orientation of the center. Some of these will be full-time and some will be part-time, the amount of time contributed being dependent on the type of patient treated in relation to the services available. In addition to the medical members of the team there are paramedical members. Among these are the nurse, the physical therapist, the occupational therapist, the speech therapist, the psychologist, the social worker, the vocational counselor, the adaptive equipment engineer, the prosthetist, the brace-maker, and any other personnel that may be concerned with the care or evaluation of the patient.

At the Kenny Institute we feel that one of the most important members of the medical team is the referring physician, since he has information available from before the time the patient was admitted and will be carrying on the after-care of the patient when he goes home from the center. Thus he can contribute to us his knowledge of the previous care of the patient and we can contribute to him a knowledge of what is being done and the philosophy of rehabilitation

so that he can carry on the follow-up more intelligently.

We spend the first week primarily in evaluation of the patient and he is evaluated from all angles —both medical and paramedical. It is not always possible to make an accurate evaluation in that time but in most instances we have found it is possible. When this is completed we have an evaluation conference, at which time each person who has been involved in the examination of the patient presents his findings and recommendations. Then, co-operatively, we try to make a decision as to what goals may be realistic for this patient. The methods for attaining these goals are outlined and adequate prescriptions given, not only medical, but also social and vocational. We try to make these goals practical and not too remote because most patients have difficulty in accepting a remote goal. For instance, we may have in mind eventual placement in a job which will require ambulation, but we may have to approach it in stages; at first, using wheel chair transportation as the practical mode of getting from place to place, and using ambulation only for exercise. At a later date, ambulation only crutches and braces may be practical for complete locomotion and the wheel chair may then be discarded.

When the physical rehabilitation of the patient has been completed and we are ready to return the patient to employment, difficulties are frequently encountered. The employer may be reluctant to hire a handicapped person because of fear that he may incur further injury because of his handicap. This fear has no foundation statistically because studies of this factor have shown that in general these workers have less tendency to injury and are usually so well motivated that absences from all causes are less than in the normal person. Some of this resistance to employment of the handicapped may come from insurance companies. At least the employer often claims this is so.

Sometimes the patient cannot be returned to competitive employment directly because of physical, mental or emotional factors within himself. His endurance may not be adequate for an eight-hour day of hard work or he may have lost confidence in his capabilities because of prolonged illness. In such instances a sheltered workshop is valuable.

Sheltered Workshops

Sheltered workshops are ordinarily of two types —the transitional and the terminal. In the transitional sheltered workshop the patient is instructed in an occupation or carries on a certain kind of work under conditions which are within his capabilities so that he may have his strength and confidence restored and can later return to competitive employment. The terminal sheltered workshop is used for those individuals who cannot compete in industry and must be employed permanently in a facility which offers some protection from the necessity of competition. Such sheltered workshops often are established to cope with certain types of disability; for instance, societies for the blind and hard of hearing have special sheltered workshops. They do not always serve to give the individual sufficient income to carry on his family responsibilities but frequently they do help to restore his sense of self-respect and self-importance because he can contribute at least partially to the financial needs of himself and his family.

I feel that it is important for the vocational counselor not only to advise the client as to his capabilities and arrange for adequate training, but also to follow him until he is actually employed in a manner that is satisfactory both to the employee and the employer.

Follow-up on these patients from all points of view—medical, social, psychological, and vocational—is needed almost unendingly because problems may arise at any time. Many of them may be solved quickly if detected in the early stages or may be prevented by adequate follow-up.

The types of disabilities that may need extensive rehabilitation procedures cannot easily be enumerated because we are treating not so much the disease or injury as the results of the disease or injury. Thus, many patients who obviously cannot be improved medically may still receive benefit from rehabilitation. The exact medical diagnosis—fracture, tendon laceration, arthritis, et cetera—is thus not as important as the factors producing disability—contracture, weakness, pain, deformity, and so forth.

A few of the conditions which more commonly require physical rehabilitation are discussed here.

Conditions Commonly Requiring Rehabilitation

Fractures.—Those fractures which are likely to produce contractures, fibrosis, or weakness, and

those requiring prolonged immobilization (especially in the presence of prolonged swelling) require treatment directed toward the prevention or correction of these factors. In general, these are: severely comminuted or compound fractures; those with delayed union, non-union, or mal-union; fractures into or near joints; and those accompanied by nerve or tendon injuries.

Especially important is the patient suffering from a fracture of the spine with spinal cord injury and resultant paralysis. If this occurs in the neck, the victim has paralysis of the lower extremities and trunk and of portions of the upper extremities depending upon the level of the lesion. Usually hands and triceps are paralyzed. This patient is usually not ambulatory, requires a special wheel chair and adaptive devices or surgical procedures must be used to make the hands functional. When the injury occurs in the dorsal or lumbar area the patient has a paraplegia resulting in paralysis of the lower extremities and trunk. However, he still has adequate upper extremity function and many of these patients can be made ambulatory on crutches and braces but most of them have residual urinary tract problems difficult to solve. The lower the level of injury, the more functional the patient will be.

Skull fractures may result in brain damage. In this case the results depend upon the severity and location of the injury. If the motor area on one side is involved, the symptoms may be similar to a "stroke" which will be discussed later.

Dislocations.—Dislocations present the same problems as fractures. Nerve injuries may accompany them, particularly in the shoulder joint.

Amputations.—Many amputees require treatment in the rehabilitation center. The objectives of this treatment are to prevent or correct contractures, to develop muscle strength, to prescribe a proper prosthesis and see that a satisfactory fit is obtained and to train the patient in the use of the prosthesis.

Patients with upper extremity amputations should have a complete evaluation of the factors of employment before prescription of the prosthesis and they usually require long periods of training to develop skill in the use of the prosthesis. This is often done best in the occupational therapy department.

Persons with lower extremity amputations should receive special attention to the possibility of hip flexion contractures. If these are present, ever though very mild, the patient may assume that his prosthesis does not fit and he will discard it, going back to crutches or wheel chair (possibly becoming non-functional) whereas function would have been possible if the contracture had been prevented in the early stages of the amputation or had it been treated adequately in the later stages. This requires prolonged treatment in order to be successful.

Gait training should be started as early as possible and continued until the patient has full confidence in his ability to handle the prosthesis under all conditions.

Multiple amputations increase the problems but many multiple amputees can be returned to useful function and employment.

Tendon Lacerations.—Tendon lacerations are notoriously difficult problems, especially those in the hand. We have two conflicting objectives here. We must obtain solid healing of the cut ends and yet prevent adhesions to the surrounding structures which would limit motion. Treatment should be begun as soon as the skin wound is healed. It requires skill and patience to obtain the best results.

Peripheral Nerve Injuries.—In peripheral nerve injuries it is important to realize that regeneration proceeds very slowly. Degeneration continues for about a month and then regeneration begins which proceeds at the rate of about an inch a month. Electrical diagnosis often helps in determining the depth of degeneration. Interrupted galvanic stimulation is useful in maintaining muscle contractility and preventing fibrosis during the period of regeneration which may last as long as two years.

Back Injuries.—Back injuries constitute the greatest bug-a-boo of compensation medicine. Most of them can be treated successfully in a general hospital or the doctor's office and the patient restored to working capacity with a minimal amount of physical treatment. However, some of the most severe cases will require long periods of rehabilitation, and many of these persons cannot be rehabilitated.

During the acute phase the physical measures

are directed toward relief of pain and muscle spasm. Heat and massage, traction, and the Williams position are useful for this purpose. Braces should be avoided if possible because the patient often tends to depend too much upon the brace. This is followed by gradually increasing exercise and gradual resumption of activities. Accurate diagnosis of the causative factors is extremely important but often extremely difficult.

In the chronic stage, again, careful evaluation of the factors that are prolonging the disability is necessary and treatment is directed toward these factors. Surgery is occasionally necessary and is effective against sciatic pain but often does not relieve backache which is frequently due to muscle shortening and fibrosis.

Psychosomatic problems are often encountered. In those patients who have psychosomatic overlay on their back injury, and are disabled more by the mental reaction to illness than by the illness itself, the psychologic impact of a complete evaluation by many individuals, who then arrive at a type of treatment which seems logical to the patient, may restore him to functional capacity. We have had this happen in numerous instances.

Hysterical Paralysis.—Patients with hysterical paralysis may be benefited in the same way.

Poliomyelitis.—Poliomyelitis is a disease resulting in multiple types of paralysis which often requires very intensive rehabilitation in order to get the patient back to work or to self-care. It constitutes a large part of our patient load.

Hemiplegia.—Hemiplegia, the ordinary stroke, presents many problems of a severe nature. If the hemiplegia is on the right side of the body the patient is likely to have speech difficulties in addition to paralysis. These depend in severity on the amount of damage that has occurred in the brain. Some of these patients can be improved or restored to good functional level by speech therapy. Some others, especially those who had severe brain damage, cannot be restored to useful levels of speech. Occasionally, a patient will have only the speech area knocked out while retaining his function of arms and legs. These patients, however, usually have good reasoning powers and may be able to carry on in a vocational situation.

Persons experiencing left hemiplegia are not usually disabled as to speech but do have certain problems related to mathematics and spatial discrimination which may be even more disabling than a speech problem. Such patients tend to disregard things on the left side of them and often do not realize that the left arm and leg are functioning. They tend to bump into objects to their left. They may make mistakes in calculation and mistakes in judgment but do not realize such mistakes have been made.

Arthritis.—Arthritis is a disabling disease, certain phases of which may respond to rehabilitation procedures. The actual course of the disease may not be altered by any medical or physical method. However, the functional ability of the patient may be altered greatly by adequate physical treatment; particularly in those instances where the disease has run its course and is no longer active but the patient is left with joint ankylosis, limitation of motion, and deformity. Plans can be made so that the patient will return to employment with the aid of devices to help ambulation or to help function of the upper extremities.

Certain problems related to other diseases such as muscular dystrophy, multiple sclerosis, amyotonia congenita, and many others may be benefited by rehabilitation.

Conclusion

The philosophy of rehabilitation is fundamentally the use of those capabilities remaining to the patient following severe disease or injury to restore him to the highest physical, mental, social and economic level of which he is capable.

DIABETES DEATH RATE

Does marital status play a role in diabetes? Prior to the age of forty-five the death rate from diabetes is higher for single women than for married women. For example, between the ages of thirty-five and forty-four the death rate is approximately 65 per cent higher for single women. However, after the age of forty-five the death rate for married women exceeds that for single women. Among men, the death rate from diabetes is greater for the unmarried until the age of seventy.—*Patterns of Disease.*

Management of Acute Injuries of the Head

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This modern age of speed brings with it an increasing toll in severe head injuries. Ideally, such injuries are managed by a neurosurgeon, but one is not always available. Thus, all physicians should know something about the treatment of those acute cranial emergencies that cannot wait for the neurosurgeon. This article briefly discusses the management of a few of these emergency situations, with emphasis on acute subdural and acute extradural hemorrhage.

AS THE population of this country increases and the inhabitants find themselves moving ever more rapidly in their environment, they encounter increasing numbers of problems, one of which is acute injury to the head. The commonest source of serious head injury is automobile accidents. Damage to the brain and spinal cord causes 70 per cent of the deaths resulting from automobile accidents. About 70 per cent of deaths from head injuries take place in the first twenty-four hours.[1] Associated injuries frequently may take precedence over the head injury. Therefore, the proper care of the severely injured patient is best handled as a team effort involving several surgical specialties. However, the cranial trauma frequently takes precedence over other less devastating injuries.

Ideally, the head injury should be treated by a neurosurgeon but, unfortunately, one is not always available. Consequently, some head injuries must be treated by other physicians. Therefore, I believe that physicians are obligated to acquaint themselves with those head injuries which require immediate lifesaving procedures.

Two conditions are particularly important in this regard. They are acute subdural hemorrhage occurring in newborns or extremely young babies and acute extradural hemorrhage occurring in adolescents and older persons. These situations frequently require immediate definitive surgical action. Some cranial emergencies require other types of immediate action to save lives, such as tracheotomy.

Classification of Head Injuries

It is important to this discussion to present a classification of head injuries that is clinically appropriate. It is convenient to divide them into three types, namely mild, overwhelming and "indecisive." Lacerations of the scalp and concussion are examples of mild head injuries not requiring much treatment or concern. Overwhelming injuries include crushing types of trauma, massive intracerebral hemorrhage, massive intraventricular hemorrhage, and laceration of the midbrain or brain stem. This group includes those injuries incompatible with life and, consequently, patients so injured rarely survive long enough to see a physician.

The third group, the "indecisive" type, includes acute extradural hematoma, acute subdural hematoma, chronic subdural hygroma, chronic subdural hematoma, depressed skull fracture, basal skull fracture, traumatic cerebral edema, and some instances of brain laceration and hemorrhage. These injuries can be effectively treated in many instances, with the preserving of many lives. Most of these patients will survive long enough after the initial trauma to reach a neurosurgeon.

Pathologic and Physiologic Aspects of Head Injuries

The pathologic aspects of injury to the brain may be discussed briefly under the categories of concussion, contusion, laceration, thrombosis and edema. One might consider concussion as a temporary physiologic disruption of brain function without anatomic evidences of disruption. It is described as a consistent reduction of activity in the reticular substance of the midbrain or paralysis of the reticular activating system.[2] Contusion

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might be considered as "bruising" of the brain without gross anatomic interruption of brain tissue. Laceration of the brain is actual anatomic interruption of the tissue. Thrombosis and edema are the result of structural changes in the blood supply and drainage of the brain, with physiochemical alterations in the "blood-brain barrier" and cellular structures.

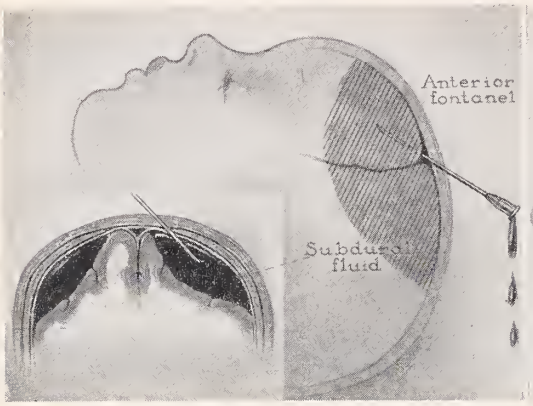


Fig. 1. Drainage of acute subdural hemorrhage in an infant by needle puncture through the anterior fontanel.

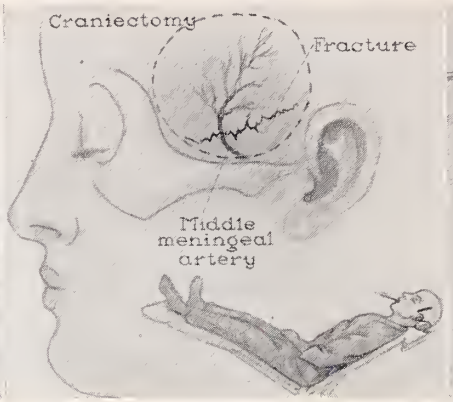


Fig. 2. Temporal craniectomy for fractured temporal bone that has lacerated middle meningeal artery and caused acute extradural bleeding.

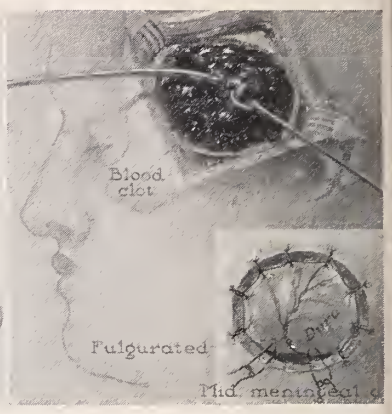


Fig. 3. Evacuation of blood clot and coagulation of middle meningeal artery in acute extradural bleeding.

Physiologic changes are manifested by focal and generalized alterations in brain function. If a motor area is lacerated, focal paralysis results. If generalized edema occurs, it is manifested by increased intracranial pressure and resultant slowing of the pulse, increase of blood pressure and deterioration of consciousness. This clinical picture does not identify or localize the lesion but only signifies increasing intracranial pressure. Both localized and generalized phenomena may be seen simultaneously. Surgical intervention usually is indicated when there are evidences of progression of focal signs or evidences of increasing intracranial pressure or evidences of both.

Treatment of Indecisive Head Injuries

In considering the indecisive group of head injuries, I shall mention briefly those usually treated by the neurosurgeon. The situations that may be encountered by physicians who are not neurosurgeons will be outlined in more detail.

Acute subdural hematoma in adults usually is associated with injuries to bone and brain and is rarely observed in a "pure form" requiring immediate exploration. When it does necessitate emergency attention, it simulates extradural hemorrhage and is treated accordingly. Chronic subdural hematoma and subdural hygroma are rarely emergency situations. Patients with such lesions should be referred to the neurosurgeon. The presence of such lesions is recognized by progressive evidence of increasing intracranial pressure and focal signs such as progressive paralysis, focal seizures or unilateral pupillary dilatation.

Depressed skull fractures and penetrating injuries should be débrided but in this age of antibiotic therapy the emergency is not particularly acute, and the patient can be transported to the nearest available neurosurgical center. Basal skull fractures are not usually surgical emergencies but precautions should be instituted to prevent meningitis. Leakage of cerebrospinal fluid from the nose or ear may accompany such injuries. Closed head injuries that produce cerebral edema are frequently more serious in the acute phase than are the more gruesome compounded, comminuted, brain-lacerating fractures. In the former, the brain sustains a greater impact and suffers more serious damage than it does in the latter, in which the impact is dissipated by fractured bones and focal zones of lacerated brain without such truly devastating trauma to vital regions. Decompressive procedures in closed injuries occasionally are indicated. More recently, however, the tendency has been to perform tracheotomy to allow better oxygenation of these patients and, on rarer occasions, to decrease the body temperature by refrigeration to lower the metabolic rate and reduce cerebral edema. Cerebral anoxia, increased blood pressure, venous stasis, high fever and increased metabolic rate are all signs of impending disaster that is best combated by a better oxygen supply

to the brain and reduction of the basal requirements of the brain tissues.

When confronted with a head injury, most physicians can stop bleeding by the usual methods. An adequate airway is maintained if necessary by tracheotomy. If the patient is a newborn or is less than eighteen months of age and appears to be dying of intracranial bleeding, the lateral aspects of the anterior fontanel can be entered with needles, which allows one to identify acute subdural hemorrhage and relieve the pressure by the escape of blood through the needles (Fig. 1). This procedure usually can be accomplished in a moment and a life may be saved. It can be done once or twice daily if necessary until the bleeding stops. If the fluid then becomes xanthochromic, the child can be transferred to a neurosurgical center for craniotomy and removal of the inevitable membranes.

The other acute emergency that must be recognized and that might have to be treated by physicians other than neurosurgeons is acute extradural hemorrhage. Classically, an adolescent riding his bicycle falls and strikes his head, or he is hit by a car and injures his head. He is momentarily dazed, but then he gets on his bicycle and goes home. During the next hour, headache develops, he becomes generally ill and vomits, contralateral paralysis and an ipsilateral dilated pupil appear and he becomes unconscious. At this stage, the situation is a dire emergency. He is in trouble because he has fractured his temporal bone and in turn the fracture has lacerated the middle meningeal artery. This has caused extradural bleeding in the middle cranial fossa. He is drowsy and feels ill because of rapidly increasing intracranial pressure. He has contralateral paralysis because of pressure on the ipsilateral motor area. He has an ipsilateral dilated pupil because of herniation of the temporal lobe through the tentorial notch, with compression of the third cranial nerve. Surgical intervention is imperative and must be accomplished without delay. Temporal craniectomy is done (Fig. 2), with the patient prepared for bilateral exploration, as the bleeding rarely may be on both sides.[3] The blood clot is evacuated and the middle meningeal artery is coagulated, tied, clipped or packed (Fig. 3), but the pressure must be relieved immediately. The actual loss of blood is usually inconsequential. Some patients may be transported to a neurosurgeon for this treatment; if it is a matter of a 30-mile trip, the patient might be saved, but a 90-mile trip might result in death. Therefore, the recognition and treatment of this condition should be familiar at least to anyone who calls himself a surgeon. If not, preventable deaths will continue to occur.

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CYSTS OF THE SPLEEN

(Continued from Page 618)

Large cysts originating in the splenic parenchyma are symptomatic but do not cause hypersplenism. The greatest single aid in diagnosis is a roentgenologic examination. The treatment of this rare condition is splenectomy.

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Arteriography and Cardioangiography

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ARTERIOGRAPHY and cardioangiography have become accepted adjuncts in the field of roentgen diagnosis. It is the purpose of this brief paper to show that their applications are many, exclusive of the field of intracardiac anomalies. As intimated, it is a procedure which is of practical value in determining the advisability and/or feasibility of surgery, directly or indirectly associated with vascular problems.

The procedures are usually a joint project between the surgeon and radiologist. Suffice it to say, the radiologist must provide a rapid film changer and radiographic equipment capable of at least six, and possibly twelve, exposures per second. Another essential is that of a mechanical contrast injector. Manual injections are inadequate except when working with infants. Special contrast agents containing high percentages of iodine and special catheters are also necessary. Cine radiography will probably supplement the rapid film changers in the future.

Space does not permit us to discuss the techniques, but two approaches are used. Forward angiography was the most widely used approach until the more satisfactory selective angiographic techniques were developed. Forward angiography refers to the injection of a contrast agent through the antecubital vein or saphenous vein. This results in rapid dilution of the contrast with inevitable loss of detail in children and adults. It is relatively satisfactory in infants. Selective angiography refers to the insertion of a catheter directly into the vessel or cardiac chamber to be examined. As a result, the contrast delineates the segment being studied more vividly, and the extraneous vascular shadows are avoided.

The following five cases briefly demonstrate the value of the procedure in determining the necessity and/or feasibility of surgery.

From the Departments of Radiology, Mount Sinai and University of Minnesota Hospitals, Minneapolis, Minnesota.

Presented before the Minnesota Surgical Society, Mt. Sinai Hospital, Minneapolis, Minnesota, November 1, 1957.

Case Reports

Case 1.—The patient was a thirteen-month-old Indian boy born in a tuberculosis sanatorium. The child was physically underdeveloped and had exhibited respiratory distress and pallor since the age of nine months.

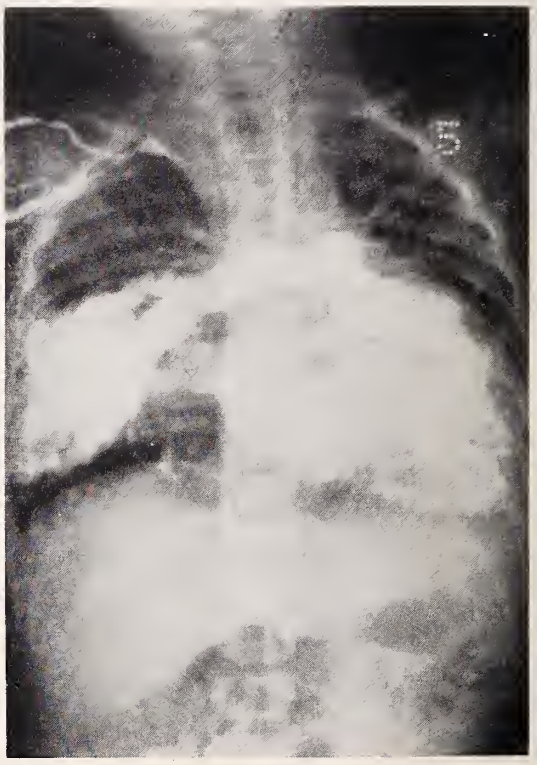


Fig. 1. *(Case 1)* Angiogram showing fill of large arteriovenous communication from large right pulmonary artery into congenital defect in right middle lobe and to a lesser extent in the right lower lobe. (Feinberg, S. B.: Roentgenographic Findings in Respiratory Problems in Infants. MINNESOTA MEDICINE, 39:285-289, May, 1956.)

On admission to the hospital, a patch of central homogeneous density with peripheral patchy densities was noted to occupy the middle lobe, as determined by radiographic examination. Some observers interpreted this as representing tuberculous pneumonia.

A suggestion of serpiginous vessels was noted and angiography was recommended in spite of the absence of bruit or polycythemia.

Angiograms (Fig. 1.) confirmed the impression of a massive arterio-venous communication of the right middle lobe as well as a smaller one in the anterior segment of the right lower lobe.

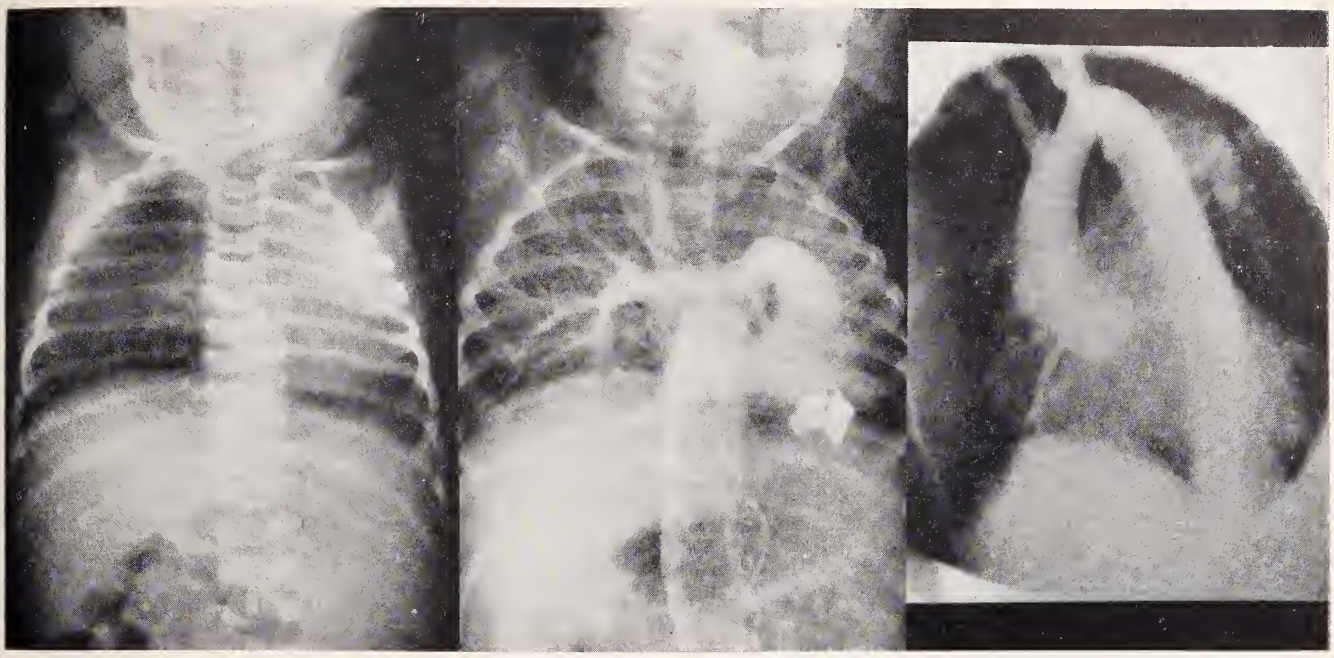


Fig. 2a. *(Case 2)* Question of atelectasis of left upper lobe with shift of heart and mediastinum to left as well as deficient vascular pattern in left lower lobe. Absence of bronchial airway suggested agenesis of left upper lobe.

Fig. 2b. *(Case 2)* Angiogram showed large but normal right pulmonary artery. On the left, an underdeveloped artery was noted going to the lower lobe, but no pulmonary artery to the upper lobe was present.

Fig. 3. *(Case 3)* Previous operative diagnosis of aortic-pulmonic window was questioned. A retrograde aortogram showed no abnormality or pulmonary artery communication. This examination shows the advantage of retrograde aortography for the study of the coronary arteries.



Fig. 4. *(Case 4)* A left femoral retrograde aortogram was used to avoid the dangers of percutaneous aortography. An aneurysm of the right iliac artery was demonstrated.

Figs. 5a and 5b. *(Case 5)* Inferior venacavagram using retrograde catheter to evaluate the possibility of vena cava obstruction was done. No vena cava obstruction was present.

Case 2.—The infant was nine months old when first seen. She was reported to have had pneumonia "early in life." Her radiographs showed homogeneous opacification of the left upper lobe with retraction of the lingula and compensatory emphysema of the left lower lobe. Because of the lack of air-filled bronchi and the small left pulmonary artery (Fig. 2a), agenesis of the left upper lobe was suggested.

Angiograms (Fig. 2b) showed a diminutive left pulmonary artery going to the left lower lobe with no branch going to the left upper lobe.

(Continued on Page 663)

Special Article

A Neurologist's Escape to Lapidarian Delights

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A FRENCHMAN once said, "If a man has not become a gardener by the time he is forty years of age, he will most certainly lose his mind." Even less colorful epigrams to the same point have survived the centuries, and epigrams survive only because they are trenchant reminders of disregarded experience. But it seems to be a happy provision of nature to entice most of us into some kind of gardening early in childhood.

Herman Melville observed in *Moby Dick* that all men's footsteps turn instinctively toward the sea. But the sea was far removed from my home in southern Illinois, and as soon as I could walk, my footsteps turned instead toward the coalbin. There, in the lustrous soft coal and to my mother's dismay, I spent many happy hours in searching for imprints of ferns, crystals of gold and other treasures.

"Earth Has One Tale to Tell"

The results of these studies were never published, for I was still in short pants when father took us back to my native state, Wisconsin. There I discovered gravel, and soon stones were running through the holes in my pockets. I might never have learned what lay hidden from sight within those stones had good fortune not again taken up its pursuit of me. My first teacher in the lapidary art was an internist, a friend of many of you, that versatile genius, the late Charles K. Maytum. To him I owe a debt of gratitude, for presently I became a member of a fraternity that gives no examinations, requires no theses, charges no dues and is lavishly endowed. There is convincing evidence that preparations for our coming were underway some three or four billion years ago. It was of this period that Job so eloquently said, "He stretcheth out the north over the empty place and hangeth the earth upon nothing." In this monstrous kitchen minerals and mixtures of minerals that we call "rocks" came into being. And ever since, and even now on the more gentle earth we know, the forces of nature continue restlessly at work for us.

We have been warned to beware of a man without a weakness. By this criterion the collector of rocks and minerals is safe, for every stone in his neighborhood commands his attention. Or you may find him thousands of miles from home on his hands and knees, hopefully searching for a stone reputed to be hidden in the earth. To be sure, there are risks involved in such pursuits. Once, on the jade fields of Wyoming, I stood suddenly frozen by an ominous rattling sound. My eyes cautiously surveyed the ground on which I stood but could detect no source of this disturbance. Finally I ventured to move on, and when I overtook my friend, who knew the country well, and told him of my fright, he laughed and said, "There are weeds here with seed pods that rattle when the wind blows very hard, as it is doing today. These rattling pods sound just like snakes."

In Montana I came across a sign I thought was meant for trespassers:

"In frontier days the average party's demise was plumb abrupt. . . . The pioneers, being a vigorous breed, and tough as leather, were hard to kill with a 45-90 slug. . . . So when a gent was called he usually left in a cloud of smoke. . . . Because of the occupants' habit of fading out in their moccasins, this necropolis has long been known as Boothill Cemetery."

Read at the meeting of the Minnesota Society of Internal Medicine, Rochester, Minnesota, October 21, 1957.

Dr. Woltman is an Emeritus Member, Section of Neurology of the Mayo Clinic and Mayo Foundation, Rochester, Minnesota. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

AUTHOR'S NOTE: This title, being the best part of the paper, should be read last. Because the program had to go to press while the author was away, my colleague, Dr. James Eckman, contrived one of his routine but invariably brilliant "escapes."

"Beauty Provoketh Thieves Sooner Than Gold"

But the amateur lapidarist's most characteristic weakness is a growing, gnawing love for the motor of his wife's washing machine. At last this temptation overwhelms him and he steals the motor without compunction or loss of fraternal esteem. Yet all this mischief prevents worse mischief, for a man's mind, like an old board, will warp unless it is nailed down.

"Hand and Mind Can Use the Tools They Get"

Now, having gotten a stone and a motor at little or no cost, the lapidarist is ready for business. His problem is to cut the stone. The man in a shack and in the shadow of a mountain may do this with the lid of a tin can or a disk cut from an old fender. This disk, now called a "saw," is spun through a bath of mud to which an abrasive, such as silicon carbide, has been added and the stone, usually swung on a hammock or mounted on a carriage, is moved into the edge of the spinning disk which bites its way through the stone. The gentry usually buy a saw, the edge of which has been charged with diamonds. Such a saw cuts faster. Because heat is generated, a liberal supply of oil or water is used as a coolant. The water also washes away the sludge.

A cut slab of stone is rough and disappointing and calls to mind Flaubert's disconsolate general, Hanno: "Tears coursed down his face as winter rain over a ruined wall." But one may get some idea of what the stone will look like when it is polished by dipping it into water, or, if no stranger is around, the custom is to call out that capable and willing servant, the tongue.

The next step is called "sanding." This may be done by holding the stone against a grinding wheel or on a horizontally rotating disk of cast iron, called a "lap," on which an abrasive powder, usually silicon carbide, and water have been sprinkled. By manipulating the stone the worker can give it any desired shape. Scratches are successively removed by the use of fine and finer grits of abrasive. The stone is now ready for polishing.

Polishing may be done by holding the stone against a felt wheel dressed with a polishing agent, such as tin oxide and water. No sooner does the stone touch the wheel than it springs to life, translucent and radiant with color. These polishing agents often are softer than the stone, and just how they work is not known. Some electrical phenomenon may be involved.

In the shaping and polishing of smaller stones recourse is had to a device that has come down through the centuries. The fragment is cemented to the end of a stick, called a "dop." This not only assures control of the stone and prevents an opal's being shot across the room and breaking into bits, but it also forestalls a sanguine manicure. Opaque stones are commonly cut to an oval shape, the bottom flat, the top convex. This cut is called "cabochon."

Transparent stones require transmitted light to bring out color or brilliance. Hence, such stones commonly are faceted. The refractive index of the mineral determines the proper inclination of these facets, front and back, relative to the horizontal girdle of the stone. The object is to cause the light that enters the top of the stone to be reflected by the bottom, so that it will pass through the stone once more, this time from the bottom back through the top. Thus, the bottom serves as a mirror. The standard brilliant cut calls for fifty-seven facets. Accurate placement of these facets is not done freehand, but with help of some graduated and steadying device, such as a gim peg or a faceting head.

There is still another way of polishing stones in which irregularity of shape is emphasized. This is achieved by tumbling fractured stones in a revolving barrel, first with water and an abrasive, then with water and a polishing agent. The result is pleasing. Such stones are especially suitable for use in earrings and bracelets. This finish is called "baroque."

Spheres usually are cut between the ends of two pipes that are somewhat smaller in diameter than the sphere to be made or by running the stones in a race between two laps.

For purposes of microscopic study and identification, stones are sometimes ground to a powder, or sections are cut to a thickness of about 25 microns and mounted on a glass slide, much as a pathologist mounts tissue. This technic, introduced about the middle of the last century by Henry Clifton Sorby, an English geologist, complemented by the work of chemists and crystallographers, revealed the private lives of rocks and made petrology an exact science. Such preparations, when viewed with polarized light, may exhibit a remarkable display of colors. The wave

length and deflection of the light that is transmitted help to identify the mineral.

"Full Many a Gem of Purest Ray Serene"

No stone is without interest, but some stones appeal more to the eye than do others. To qualify as a gem stone, the mineral should be beautiful and it should be durable. Yet a dandelion is both of these. Obviously, this is not enough. A gem stone must also be scarce and it must be fashionable; something I have that you want, or vice versa. These features underlie a rather confusing terminology. The precious stones constitute that stately and sparkling procession: the diamond, the sapphire, the ruby and the emerald. All other gem stones are semiprecious, even though some of these may cost more than a precious stone. The Roman senator, Nonius, paid the equivalent of $800,000 for the greatest opal of his time. Occasionally a diamond with color—yellow, blue, green or red—is found. These are called "fancy stones"; they also command a fancy price.

Perhaps the most famous of these fancy stones is a diamond called the "Hope Blue." It weighs 44.5 carats, or slightly less than 9 gm., and is about an inch across. Its origin is cloaked in mystery, but it appeared in London in 1812, in company with a smaller blue diamond. It then disappeared for eighteen years, then turned up in a London pawnshop, where it was bought in 1830 by Sir Henry Thomas Hope for some $90,000. Later it adorned the favorite wife of the Sultan Abdul-Hamid. In 1911 it was purchased by Mr. Edward McLean, of Washington, D. C., for an undisclosed sum, possibly $300,000. It is now in the possession of Mr. Harry Winston, a New York jeweler, and recently it has been said that it might be acquired by the Smithsonian Institution. Earlier, two blue stones were mentioned. These are thought to have been part of a 67-carat uncut blue diamond that was brought from India in 1642 by a French traveler, Jean-Baptiste Tavernier, and later sold to Louis XIV of France. In 1792, during the French Revolution, this stone could not be found among the plundered crown jewels. Famous gems are known the world over, and the thief of any one of these would be safer with a pocket full of radium.

The common unit of weight is the metric carat. A carat is equivalent to 200 mg.; divide the carats of your wife's diamond by 5 and you have its weight in grams. A point is 1/100 carat, or 2 mg.

A mineral more familiar to us than diamond is corundum, aluminum oxide, which, because of its hardness, is used in the manufacture of grinding wheels. But, given a clear crystal of corundum with a trace of chromium, you have a ruby; add instead of chromium a trace of titanium and it becomes a blue sapphire. Rubies are always red, but corundum in any other color, be it pink, blue, green or yellow, is sapphire. In this country rubies and sapphires have been found in North Carolina and Montana. A good ruby may cost twice as much as a diamond and an emerald four times as much.

Quartz is most familiar to us in the form of sand. The Greeks were impressed by these watery-looking crystals, and speculated that ice had been compressed by an overlying mountain until it had become permanently solid. When it is purple, presumably because of a trace of iron, quartz is known as "amethyst."

One member of the quartz family exhibits such a striking optical phenomenon that it should be particularly mentioned. Unlike the diamond, which refracts light, this mineral owes its optical properties to interference, which also gives a soap bubble or a film of oil its colors. Presumably, interference may result from fracturing, lamellation or the irregular disposition of water and when this happens to quartz, the result is color at play and the stone is called an "opal."

The manufacture of synthetic gems, such as rubby, sapphire, spinel and emerald, is a relatively recent achievement. By the fusing of powdered aluminum oxide in an oxyacetylene flame and the adding of chromium oxide, a chemically pure and physically faultless ruby can be produced. Synthetic gems have all the good points and few of the faults of their natural counterparts. They are saints without sin; but this makes them less interesting and also less expensive.

"Written With a Pen of Iron, and With the Point of a Diamond"

From earliest times gem stones have figured conspicuously in ceremonials. There was one collection of gems that became the subject of much study and controversy. This was the collection of twelve rare and costly stones that were mounted about 12 centuries B.C. in the breastplate of Aaron the Levite, first high priest of the

Israelites. These stones were about 2 by 2½ inches and on the back of each was engraved the name of one of the tribes of Israel. The color of each stone was appropriate to the tribe and its standard in camp. Moreover, the stones were believed to possess miraculous power. It was held that by changing luster they revealed the guilt of the sinful, portended disease and forecast the outcome of battle.

In the authorized version of the Bible, 1611, the designation of the stones is explicit. For example, "the second row shall be an emerald, a sapphire and a diamond." The sources and size of these stones and the known lack of abrasives that would cut some of the stones in ancient times have aroused the suspicions of lapidarists. Scholars were interested, but not disturbed. They realized that the translators of the Authorized Version had consulted the best works available at the time and had conveyed the thought of the texts beautifully. When King James I in 1604 appointed the most learned in Westminster, Oxford and Cambridge to the number of four and fifty who labored twice seven times seventy-two days and more, or two years and nine months, they produced one uniform translation of the Bible into good English without marginal notes, as King James had instructed them to do. It has been said that no other committee of this size ever accomplished its purpose.

The original texts with which the translators worked were not so explicit as to the naming and arrangement of the stones, and the identification of the stones has been uncertain. For example, the stone that carried the name of Judah was called a "glowing coal." One translation was "ruby." There is no proof that this stone was known to the early Egyptians, and the "glowing coal" actually may have been garnet or red jasper. How would you have translated it? The sapphirus carried the name "Issachar," a son of Jacob and Leah. This stone was described as "like the body of heaven" and having golden spots. The sapphirus probably was the stone we now call "lapis lazuli." The Egyptians valued it highly, demanded it as tribute, and used it in amulets. Lapis has been mined since 4,000 B.C. and the mines are still in operation. The translators rendered the Hebrew word meaning "the smiter" as "diamond." This stone carried the name "Zebulun," who was one of Jacob's twelve sons, for whom a tribe was named. Despite the legend that all twelve stones of Aaron were said to have been engraved, it is obvious that a true diamond could not have been engraved. Ancient seals often were smitten with onyx.

No trace of this remarkable tablet or that of the second temple of Jerusalem has been found. Increasingly tenuous evidence suggests that in 70 A.D. the breastplate of Aaron was taken from Jerusalem to Rome by the Emperor Titus, and in 455 from Rome to Constantinople by the Vandals under Genseric, and then returned to Jerusalem because of fear of disaster. In 615, it has been thought, it was taken from Jerusalem by the Persian king and in 637 from him by Mohammedan Arabs.

"Wisdom Is Better Than Rubies"

By this time it must have occurred to you that the amateur who ventures to collect and polish rocks soon finds himself caught in a web which he cannot resist exploring. And when he does so, he becomes enmeshed in other and still other webs, the centers of which are geology, petrology, optics, crystallography, chemistry, paleontology, the fine arts and history. As a result he never can escape; nor does he wish to. At home he has his rocks and wheels; at odd moments he enjoys the flavor of a stone in his pocket and at night he journeys from the galaxies to crystals as dainty as a timid thought. He learns to work cheerfully, to play diligently, and to live and die without regret.

NEW BOOKLET ON RESEARCH CAREERS

A new booklet, "Decision for Research," has been issued by the American Heart Association as a follow-up to the educational television series of the same name presented by NBC-TV and AHA to stimulate student interest in research careers. The booklet, prepared and published with assistance from E. R. Squibb and Sons, a division of Olin Mathieson Chemical Corporation, gives additional information about planning for a research career. It is obtainable free of charge from local Heart Associations or from the American Heart Association, 44 East 23rd Street, New York 10, N. Y.

Weber-Christian Disease or Relapsing Nodular Panniculitis

A Report of Four Cases

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RELAPSING nodular panniculitis was first described by Pfeiffer in 1892. The third and fourth cases were described between 1920 and 1930 by Weber and by Christian.[1] Since that time the number reported has increased rapidly so that presently over one hundred cases are recorded.[2] The following four cases have clinical and pathologic features which suggest that they should be included in this diagnostic category.

Report of Cases

Case 1.—Mrs. E. F. was a white woman, aged sixty-four, who complained of painful nodules present intermittently for three months on both lower legs. She had fever and malaise for a short time prior to the development of the lesions. Her temperature was 99.8° (0). Physical examination was not remarkable except for the presence of multiple elevated nodules about the left ankle and a single similar nodule over the right Achilles tendon. These nodules were tender, erythematous, and 1-2 cm. in diameter. The lesions about the left ankle appeared in some areas to coalesce. Routine blood studies and urinalysis were normal. The sedimentation rate was 59 mm per hour. A nodule was biopsied. Microscopically the skin itself was described as normal; however, fat necrosis and calcification in the connective tissue were noted. The changes were considered compatible with Weber-Christian disease. The patient was placed on prednisolone 15 mgm. daily. Prompt objective and subjective improvement occurred. The drug was gradually withdrawn over a six-week period. No untoward side effects ascribable to steroid therapy occurred, although the biopsy site healed rather slowly. (Slow healing of biopsy sites has been described repeatedly in conjunction with Weber-Christian disease regardless of steroid therapy.[3]) The patient has been followed eighteen months since therapy was discontinued without a definite recurrence although she maintains she is not entirely well. The area of the biopsy remains slightly indurated, tender, and erythematous.

Case 2.—Mrs. D. D., a white woman, aged thirty-two, complained of painful swellings about both ankles of eighteen days duration. For several days she had been aware of a similar lesion in the region of the right elbow. She further stated that she had felt unwell for one month before the onset of her presenting symptoms and that she had become progressively more "pooped." She had mild chills and fever several nights before her first visit. She had had a mild sore throat intermittently. Physical examination revealed a temperature of 99.2°(0) in the A.M., diffuse pharyngeal injection and a small nodular goiter. Multiple erythematous areas were present about both ankles, coalescing in places. These areas were warm, indurated and tender, but not definitely elevated; however, there was considerable pitting edema about and distal to the lesions. A similar lesion was present on the lateral aspect of the right elbow. Routine blood studies and urinalysis were within normal limits. The sedimentation rate was 17 mm. per hour. A biopsy of a lesion was obtained. Microscopically the skin was described as normal, but deeper sections showed considerable inflammatory infiltrate with some fibrosis. The changes were interpreted as compatible with Weber-Christian disease. The patient was placed on prednisolone 40 mgm. daily with prompt improvement. The steroid dosage was reduced rapidly. A mild exacerbation of the process occurred when the steroid had been reduced to 20 mgm. daily, but subsided when the dosage was held at that level for a time. The patient returned to her home in Indianapolis prior to discontinuance of the drug; however, the steroid was subsequently completely withdrawn without further difficulty. Total duration of steroid therapy was five weeks and no untoward side effects occurred. The patient informs me by letter that she has had no frank recurrence of her difficulty, but further states that she has not been entirely well since the acute episode. Her subsequent symptoms include fatigue, aching and stiffness of various joints. Fourteen months have elapsed since the original episode.

Case 3.—Mrs. L. J., a white woman, aged sixty, complained of tender areas on her legs, aching in the legs and abdomen, fever, chills and sweats, all of one week's duration. Physical examination revealed a temperature of 99°(0) and moderate crepitus of both knees with a slight effusion on the right. A warm elevated erythematous area, slightly over 1 cm. in diameter was present on the left calf laterally. Similar lesions were present below the right patella and over both Achilles tendons. Scattered erythematous areas were noted on both forearms, but these areas were not elevated, indurated, or tender. A complete blood count was normal except for the presence of 79 per cent polymorphonuclear leuko-

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cytes in the differential white count. The total white blood count was 8,850. Urinalysis was negative. The sedimentation rate was 67 mm. per hour. A biopsy was obtained of the lesion on the left calf and was reported as showing scarring and extensive hyaline change, the overall pattern suggesting scleroderma. Review of the situation with the patient revealed that the active lesion had appeared surrounding an old traumatic scar, which had apparently been biopsied inadvertently. The patient was placed on prednisolone 40 mgm. daily with gradual reduction of the dose. Subjective and objective improvement occurred promptly. An exacerbation of the process occurred when the steroid was reduced to 5 mgm. daily, but subsided again when the dosage was increased slightly. Subsequently the drug was withdrawn without ill effect. Total duration of therapy was seven weeks. No adverse side effects ascribable to the steroid were observed. The patient has been followed eight months after completion of therapy. Six months after the first episode new lesions appeared on the legs which disappeared spontaneously within two weeks. These lesions were not as painful as on the first occasion and there were virtually no associated systemic symptoms. Unfortunately, this episode was not observed by the author. In addition the patient continues to complain of chronic mild aches and pains in various parts of the body.

Case 4.—Mrs. E. V., a white woman, aged fifty-three, complained of swelling and tender areas about the ankles of ten days' duration. She had no other symptoms except dull headaches and discomfort in the right popliteal region of one day's duration. Physical examination revealed a temperature of 98.4°(0), and nonelevated, warm, tender, erythematous areas about both ankles. The lesions were 1-2 cm. in diameter. Other than prominent Heberdeen's nodes, no joint abnormalities were noted. In particular, the popliteal areas were negative upon examination. Routine blood studies and urinalysis were within normal limits. A lesion was biopsied and reported as showing a chronic inflammatory reaction in adipose tissue with some nonspecific granulomas. The skin was not described as abnormal. The pattern was considered consistent with a diagnosis of Weber-Christian disease (Figs. 1, 2). While awaiting the biopsy report, the process subsided to a considerable degree spontaneously. During this period of time a new lesion appeared on the left leg laterally which had an elevated "cord" centrally suggesting a superficial phlebitis. Because of the spontaneous remission, steroid therapy was deemed inadvisable. Three weeks later the process exacerbated with new lesions (similar to the earlier lesions), on the legs chiefly about the ankles. At this time the original lesions could be distinguished because of minimal residual pigmentation. With this exacerbation of the subcutaneous process, the patient noted malaise, headache, and pain in the region of the left shoulder. She remained afebrile. She was placed on prednisolone 40 mgm. daily with prompt remission of symptoms and virtual disappearance of the subcutaneous lesions. The steroid was gradually withdrawn. The total period of therapy was five weeks. This patient developed the only significant side effects in this series from the steroid medication. She became hyperirritable and had considerable insomnia. These symptoms were fairly well controlled with mild sedation. The patient has been followed nine months, states she feels entirely well and has had no evidences of further recurrences.

Discussion

A review of the literature devoted to Weber-Christian disease, particularly recent case reports, cannot fail to leave the impression that the clinical picture associated with the diagnosis of Weber-Christian disease is extremely variable. This fact has been commented on by others.[1,4] Although fever is included in the classic description of the disease, it is apparently frequently absent.[4,5] In this series objective temperature elevation was noted in Case 1 only, although two others described febrile symptoms. Characteristically, the disease is relapsing, but cases are reported where only a single episode is described.[6] In this series, under observation a relatively short time, Cases 1 and 4 had a distinctly relapsing character, although the relapses occurred quite close together. Case 3 may have had a minor relapse.

The greatest variability of all occurs in the response to various forms of therapy. In this series unequivocal response to a steroid, prednisolone, occurred in all cases. The case reported by Crosbie had a similar dramatic response; however, in other reported cases where steroid or corticotrophin therapy was employed, either no response or an incomplete response occurred.[5,7,8,9] It should be noted that in several instances the duration of therapy was very brief and in several the dosage was not mentioned or was quite small. Sandifer reports a case where partial control was achieved with cortisone, but a much more satisfactory therapeutic result was obtained with x-ray therapy.[9] The use of x-ray therapy was not considered in the series of cases being reported.

The rather great variability in the clinical manifestations of the cases described as Weber-Christian disease and the fact that pathologically the appearance produced by inflammation in the subcutaneous fat is similar regardless of etiology inclines the author to believe with Brudno[10] that Weber-Christian disease is not a disease entity, but rather a nonspecific response to a variety of stimuli, in most instances unrecognized.

The problem of differential diagnosis deserves attention. Clinically the cases in this series had

features quite reminiscent of erythema nodosum. This diagnosis can be dismissed, however, because the biopsies reveal a panniculitis. Erythema nodosum is a disease of the dermis, not of the panniculus.



Fig. 1. Low power view from section of skin and subcutaneous tissue, case 4.

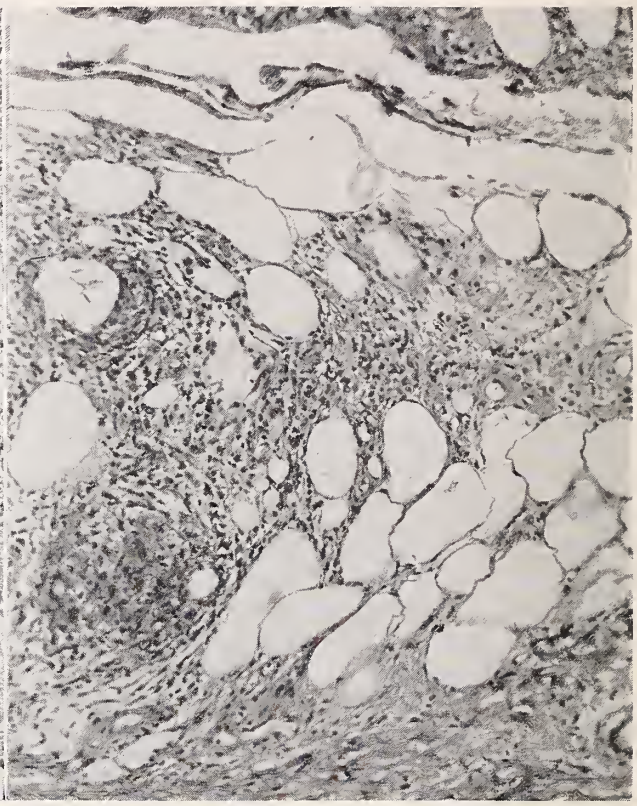


Fig. 2. High power view of the same section of subcutaneous tissue showing a chronic inflammatory reaction in adipose tissue with some nonspecific granulomas.

Michelson describes, in his very fine review of diseases of the subcutaneous fat, certain other forms of panniculitis that are pathologically indistinguishable from Weber-Christian panniculitis. The one group, other than Weber-Christian disease, that the cases in this series most resemble, is one Michelson describes as occurring secondary to stasis disease. Arguing strongly against this possibility here are: (1) the presence of systemic symptoms, (2) the upper extremity lesion in Case 2, and (3) the absence of the skin changes of stasis disease in the biopsy material.

Conclusion

Four cases are presented which can be included within a somewhat heterogenous group called Weber-Christian disease.

It would seem unlikely that this is a single disease entity and until the variants are distinguished might better be called Weber-Christian syndrome or relapsing nodular panniculitis of unknown etiology.

On the basis of the experience in this series, it would appear that short term steroid therapy is well worth a trial for the symptomatic control of an uncomfortable and unpleasant illness.

Addendum

Since the preparation of this paper, two additional cases of Weber-Christian syndrome have been observed by the author. One of these patients was much more toxic than the cases reported and had been hospitalized as a diagnostic problem for over a week when first seen. Both responded to treatment with prednisolone.

Acknowledgment

Robert Hebbel, M.D., Department of Pathology, University of Minnesota, interpreted the biopsies, Cases 1, 3, and 4. Wayne Chadbourne, M.D., then of the St. Cloud Hospital, interpreted the biopsy, Case 2. The illustrations were obtained with the assistance of Dr. Hebbel. John S. Schechter, M.D. The Indianapolis Clinic, Indianapolis, Indiana, provided a follow-up report, Case 2.

(References are on Page A-42)

Benign Calcifying Epithelioma of Malherbe

Report of Case in which Multiple Lesions were Presented

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THADDEUS J. LITZOW, M.D.
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The occurrence of multiple lesions in benign calcifying epithelioma of Malherbe probably is commoner than was formerly thought. The authors treated a nine-year-old girl who had five such tumors. Simple surgical excision is adequate treatment for this benign lesion.

A LESION encountered somewhat infrequently clinically and pathologically is the calcifying epithelioma of Malherbe. Recently we saw a patient who presented five such tumors.

Report of Case

A nine-year-old white girl was brought by her parents to the Mayo Clinic in February, 1958, for excision of three lesions of the skin. In June, 1956, a firm, nontender tumor had been noted on the left upper arm, and in April, 1957, a similar tumor had been noted on the left leg. Each of these had been excised elsewhere shortly after they had been noted. The three lesions for which our aid was sought were first noted in June, 1957. The maternal grandmother was said to have had sebaceous cysts on the scalp, but there was no familial history of intestinal polyposis and the patient complained of nothing which would involve the gastrointestinal tract.

We found three discrete tumors, one under each mandibular angle and one over the left shoulder (Fig. 1). They were 1.5 to 2 cm. in diameter, and were not tender to the touch; they were irregular and stony hard, with a finely lobulated surface. In each instance the overlying skin was faintly bluish-red and was attached to the tumor, while the tumor itself was freely movable on the underlying tissues. Because of the hardness of the lesions, the possibility of calcifying epithelioma was suggested clinically. Other differential considerations were calcified cyst (sebaceous or epidermal), calcified lymph nodes and calcinosis cutis. The routine roentgenogram of the thorax, however, revealed no abnormal shadows, such as calcareous accretions would make, in the areas in which the lesions were located.

Tissues from the two previously excised tumors were reviewed.* The three presenting tumors were then excised and examined pathologically. Microscopic examination of all the five lesions disclosed similar features, regarded as characteristic of calcifying epithelioma of Malherbe (Fig. 2). They were well-localized tumors, located in the lower dermis, and composed of variously shaped lobules consisting of two types of cells: basophilic cells and shadow cells. The basophilic cells were arranged in clusters and in a bandlike manner, and could be seen in the process of transforming into shadow cells. Areas of calcification frequently were seen within the masses of shadow cells; these areas of calcification were even more notable when the von Kossa stain was used. No areas of cornification or ossification were seen. The connective-tissue stroma contained numerous foreign-body giant cells.

Comment

The original description of this entity by Malherbe and Chenantais[1] in 1880 was followed by numerous reports. Most of these, however, have appeared in the French, German and Spanish literature. The largest series in the English literature are those of Ch'in,[2] who in 1933 collected 116 cases from the world literature and added ten cases of his own, and of Castigliano and Rominger,[3] who in 1954 collected 117 cases which, added to Ch'in's series, gave a total of 243 cases from 1880 to 1950. More recently, Martins[4] has reported an additional 205 cases of his own.

Most authors observe that the lesion is found predominantly in childhood and early adult life, and that it is usually located about the head or neck or arms. Although the tumor usually is solitary, patients with multiple lesions have been reported, and recent studies[4-6] indicate that multiplicity of lesions may not be as uncommon as was formerly thought. In few of these instances

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*This material was kindly provided for our study by Drs. Ralph T. Robinson and Donald W. Penner of Winnipeg, Manitoba, Canada.

of multiple tumors, however, have all the lesions been verified histologically. Sometimes the lesion is mistaken both clinically and histologically for sebaceous cyst.



Fig. 1. Clinical aspect of the calcifying epitheliomas of Malherbe in the case reported. Two of the tumors can be seen, one inferior to the left mandible and one on the superior plane of the left shoulder.

The histogenesis of calcifying epithelioma is not definitely established. Although many theories as to origin have been advanced, several of the more recent authors favor that which assigns the origin to the hair-matrix cells.[7-12] Most authors regard the lesion as benign. Simple surgical excision is the usual recommendation.

Whether benign calcifying epithelioma is a distinct and separate entity has been questioned. King[13] wrote that such lesions actually are mummified epidermal cysts. Lever and Griesemer[11] thought this lesion can be distinguished histologically from epidermal and sebaceous cysts which have calcified and ruptured, with the development of a foreign-body giant-cell reaction. They found basophilic cells and shadow cells in calcifying epitheliomas, while such cells are not present in cysts. On occasion this lesion must also be distinguished from basal-cell epithelioma and squamous-cell epithelioma, especially when either of the foregoing arises in a pre-existing cyst. Here again, the distinction rests largely upon the characteristic basophilic cells seen transforming into shadow cells.

Summary

An attempt has been made to focus attention on the calcifying epithelioma of Malherbe by reporting upon a patient who had five such lesions.

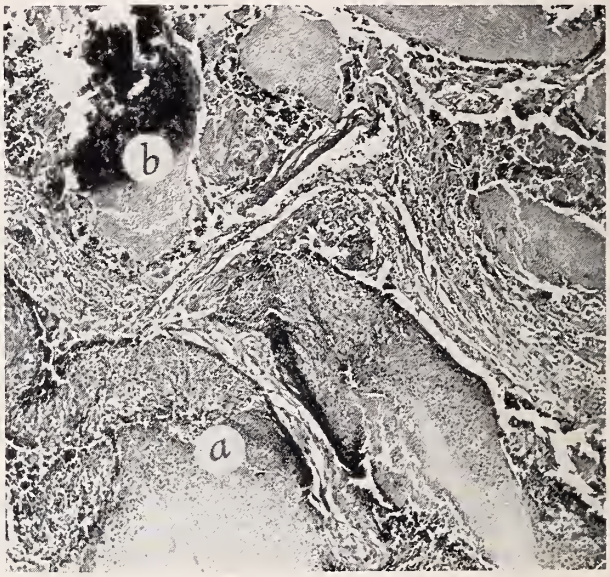


Fig. 2. Characteristic histopathologic features of the calcifying epithelioma of Malherbe which were seen in each of the five lesions in the case reported. *(a)* Lobular masses of basophilic cells are seen transforming into shadow cells. These masses lie in a connective-tissue stroma, in which a foreign-body giant-cell reaction has occurred. *(b)* An area of calcification is seen lying within a mass of shadow cells (hematoxylin and eosin; x50).

We regard this lesion as benign, and we submit that simple surgical excision constitutes adequate treatment.

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Editorials

John F. Briggs, M.D.
Arthur H. Wells, M.D.
Henry G. Moehring, M.D.

THE PRIVATE PHYSICIAN AND THE HOME CARE OF TUBERCULOSIS

For many years, the greater share of responsibility for the care of patients with tuberculosis has been delegated to specialists in tuberculosis and to local or federal government institutions. Private practitioners as a rule have been pleased to shed this duty. Now, however, due to recent changes in the care of tuberculosis, that responsibility is rapidly shifting back to the home physician. Whether this change will be good or bad will depend on how the personal physician meets this obligation. Those who firmly believe in the private practice of medicine are confident that this trend toward home care will provide not only as good care as in the past but perhaps even better. Others are somewhat skeptical. The fact remains that the care of patients with tuberculosis by their own physicians will challenge both the physicians' ability and the present system of medical practice.

The current problem of home care for tuberculous persons is due largely to remarkable advances in treatment and to effective public health work. Rest in bed is no longer so rigidly enforced, making the care of the patient much easier. Eradication of tubercle bacilli from the sputum often occurs early in the course of treatment, lessening the danger of infecting others. Patients are dismissed earlier from the sanatorium to follow medical treatment at home. With shorter periods in the sanatorium, the number of hospitalized patients has declined, and many sanatoria have closed because of lessened occupancy. With fewer sanatoria, many dismissed patients now find themselves far removed from their hospital and its outpatient care. Because of decreasing case loads, not many physicians are entering the field of tuberculosis. All these factors put a heavier load on the private practitioner.

The problem of caring for tuberculous patients at home is not new, but perhaps we have neglected to face it squarely in the past. There have been many of these patients at home always. Some of these were waiting their turn to enter the sanatorium, others had been dismissed regularly or irregularly from the hospital, while still others preferred to remain under the care of their personal physician. The United States Public Health Service estimates that now about half of the patients with significant tuberculosis are at home, a majority being in the advanced and presumably communicable state. Whether we like it or not, the problem of home care is here to stay and is increasing in importance; it will not go away simply because we refuse to look at it.

Three major aspects of treatment must be meticulously co-ordinated if the home care of tuberculosis is to be successful. The first is the important matter of public health. It is the legal obligation of the physician to report all cases of tuberculosis. From then on until long after all treatment is discontinued, health authorities must supervise the patient regularly in order to encourage him to return to his physician if he does not follow treatment, to notify other health departments if he moves to a new locality, to see that all contacts are properly examined, and to keep the patient from infecting others. At times the health officials must take legal action to control a dangerous patient, a procedure that no private physician wishes to undertake himself. We should all welcome the supplemental assistance of the health officers and give them full cooperation, but it must not be forgotten that the physician in charge is still responsible for the patient's isolation if the disease is communicable.

The second major aspect of home care is the program of treatment. This should be prescribed by those who are experienced in the medical and surgical treatment of tuberculosis, and it is initiated preferably in a hospital or sanatorium. Home care is not being substituted for hospital care. Recent studies indicate that 80 to 89 per cent of patients have at least some period of hospitalization during their disease. Initial hospitalization is so desirable for most patients as to be almost imperative, the length of confinement depending on individual circumstances.

The third aspect, which furnishes the reason for this editorial, begins when the patient is ready for home care under his personal physician. For the home physician to handle his patient intelligently, he must be given complete information

on the previous phases of the illness and projected plans for future care. From then on, the personal physician must be in complete command of the patient. He should not try to lessen his responsibility by assuming that he acts only as the agent of the sanatorium physician, even though he may seek the latter's advice frequently. In order to be proficient in his duty, the physician must, of course, learn much about the modern management of tuberculosis. It is his obligation to see the patient regularly, to encourage him to continue therapy, to watch for complications, to obtain bacteriologic, roentgenologic and other examinations as may be indicated, and to secure consultation with specialists in tuberculosis from time to time. In most well-organized sanatoria, decisions regarding treatment are not made by one physician alone but by several members of the staff in consultation. It is even more important that this plan continue when the patient returns to the care of his own physician, who should seek consultation before making any changes in the program. The hazards of interrupting or discontinuing therapy, of omitting one or another drug of a multiple-drug regimen, or of failing to recommend surgical treatment when it is indicated can be fully appreciated only by those who have seen the tragic results that may follow such action. The conscientious physician welcomes consultation and, in this day, knows that his prestige with a perplexed patient improves as a result. And the wise consultant knows that the attending physician's opinion never must be taken lightly. The two of them must be charitable in their attitude toward each other, particularly regarding treatment. After all, much disagreement still exists even among specialists.

The generally successful results of medical and surgical treatment may have led us into a false sense of security. Modern therapy can be successful only if we remember that the disease itself remains as treacherous and patients as capricious as ever.

The home physician now is being given a chance to show whether private medical practice can handle a difficult and dangerous disease with ability and safety. Although the task will not be easy, he must, and many think he will, do an even better job than that which has been done so well in the past.

CORRIN H. HODGSON, M.D.

USE OF TRUSTS

Most professional and business people have some notion of the nature of trusts, but few have a comprehensive knowledge of the numerous objectives which may be accomplished by their use.

Generally, a "trust" is the holding of property by a "trustee," subject to a duty to apply the property or its proceeds according to the directions of the "donor" or "grantor"—the person from whom it is derived. Any number of beneficiaries may be designated. One or more trustees are named, chosen for particular aptitude to discharge the duties imposed by the trust.

Trusts in their most common form are either inter vivos (created during the life of the donor) or testamentary (created upon the death of the donor, customarily by his will).

Many successful professional and business people find themselves with an accumulation of property which is to some extent greater than necessary to insure their own security. Frequently, the same persons have a very definite legal or moral responsibility to provide for the care, maintenance and welfare of a child or other person who, for one reason or another, is partially or totally dependent upon him.

An outright gift to the needy person may not be the answer because of lack of ability to manage or retain capital. So the benefactor carries on year after year supporting the object of his bounty out of funds produced by the arduous efforts of this successful man, or by careful and time consuming management of his property. Such support must be afforded from funds left after payment of state and federal income taxes at the nearly confiscatory rates applicable to the successful. Here is a typical situation where the inter vivos trust may be the happy solution.

The benefactor may set aside a sum of money or items of property which he does not need for his own support or security. This is done by declaration or deed of trust, naming a carefully chosen trustee. The benefactor (donor) may devote the trust property itself, the income from it, or both to the requirements of the beneficiary. The trustee proceeds to manage the property making distribution to the extent directed and exercising only such discretion in investment and distribution as the trust document allows. The trustee may be instructed in greater or lesser detail just how and when payments from income from the trust property or from income and prin-

cipal are to be made, either to or on behalf of the beneficiary. If the donor has not made previous gifts, then up to $30,000.00 of the amount committed to the trust will be free of gift tax. If the gift is for the benefit of a wife, up to one-half may be free of federal gift tax (and the other half subject to the same $30,000 exemption) if the trust is properly created.

It is to be remembered that to qualify for the greatest tax advantage the donor must divest himself of every vestige of control, benefit or personal interest in the trust property or its income. He may not retain even a possibility of a reversion to him at some later date, but must provide for ultimate distribution either to the primary or to other beneficiaries.

Assuming that the donor has properly divested himself of every personal interest in the trust principal and income, the donor is no longer taxed on the income produced by the trust property at the highest rate applicable in his income bracket but the trustee or beneficiary, depending on the provisions for distribution of income, is taxable at the lower rates applicable to the lower income.

Upon the death of the donor, the trust property is not subject to estate and inheritance taxes unless the trust was made in contemplation of death, that is, for the primary purpose of avoiding taxes incident upon death.

The testamentary trust is a device by which one who is skeptical of the ability of those near and dear to him to manage capital or who fears diversion of such capital by a surviving spouse from the family may insure against these contingencies. At the same time, by carefully considered instructions to the trustee, the man setting up such a trust in his will may provide as liberally as the amount of his assets will permit. At the same time he may, as in the case of an inter vivos trust, prohibit by the terms of the trust any spendthrift commitments which the beneficiary may try to charge against the property.

Such use of trusts as those here described, when carefully worked out to achieve the needs prevailing in each individual case, can and does go far toward producing contentment in the mind of the donor who has wisely provided for those dependent upon him, and also in the mind of the dependent beneficiary whose future is assured and secured by such farsighted planning.

In both types of trust care must be exercised when the beneficiary is a wife or husband to avoid any possibility of sacrificing the possible tax benefits of the marital deduction established by the federal Internal Revenue Code. However, this is the topic of another editorial to follow soon.

RONALD S. HAZEL

THE ROLE OF A DOCTOR'S WIFE

Public Relations

Doctors' wives do not swear by the Oath of Hippocrates, but they learn early in their married lives to know little or nothing about the practice of medicine or their husband's patients, and if they inadvertently find out, not to divulge anything outside the medical family.

We usually use the term Public Relations in signifying the relationship between the medical and non-medical public, but may I make a plea for the relationship between members of the medical profession. Jealousies and misunderstandings develop between doctors for they are human, too, with all the faults and frailties of human nature. These can usually be resolved between themselves if the wives will stay out of the arena. I feel very strongly that this area is out of bounds for doctors' wives. If they get into the act, the whole difficulty is so magnified that it soon becomes a community problem, and both the doctor and the medical profession suffer in community public relations, no matter who is right.

Perhaps I am a little smug in my evaluation of people, but I am annoyed when I am introduced to some doctor's wife and she says, "I am the surgeon's wife." Understandibly, the surgeon is proud of his status but he could not do his work without the team of internists, laboratory personnel, anesthetists, nurses, researchers, and all the others who are part of the medical team which has made his work safer and easier. So the wife who brags in this manner, to my mind, is speaking out of turn. She did not produce her husband, his capable hands and trained mind, or secure the medical team that made his work possible. She should rather be grateful that she is a little part of his world and try to make his supreme efforts in the operating room free from worry about her.

It seems that everything we do has a bearing on Public Relations. Doctors' wives are special people; they are always accepted socially (unless they prove themselves otherwise by word or deed), and it is a great responsibility that we do not

always recognize or care to take. Some wives are of great assistance to their husbands on this score, while others fail and their husbands' work has to get along on its own merit. A case came to my attention where a clinic needed a replacement in medical personnel due to the death of one of the members. One of the older physicians in a neighboring town offered this sage advice: "The doctor who applies will be qualified; it is most important to interview the wife to see if she has the right perspective to live in a smaller town and will be content to let her husband practice his profession as he sees fit."

Just as Big Business is now evaluating both the prospective junior executive and his wife when a promotion is imminent, so it might be a good idea to use the same yardsticks on doctors' wives. I often wonder how many of us could have passed the test, for I know that I have learned a lot in the art of trying to be a good doctor's wife. Each day brings a new challenge. I would like to mention in this field that last Spring the Auxiliary to the Hennepin County Medical Society helped organize the wives of the medical students at the University of Minnesota into an auxiliary to the student AMA. These young women are eager to learn how to be good doctors' wives, and they are going into their life's work with enthusiasm tempered with level heads and a realistic approach. This speaks well for good Public Relations.

Doctors' wives should be interested in all that affects their husbands. They are in a peculiar liaison position between the public and the medical profession, and can do much to effect a happy relationship in their home communities.

We should be interested in all phases of Public Health. This includes the various health fields, from the various clinics to mental health and all its implications from problems of children to those of the aging. We should be informed on the rehabilitation opportunities in our towns. These are the concrete programs which can be exploited through programs put on in clubs, Ladies Aids, PTA's and the like. In fact, this whole program can become so involved that we have time for little else.

What about Hospital Auxiliaries? Here is a wonderful place to spark the lay woman. The doctor's wife should be interested in her Hospital Auxiliary, but she should stress the fact that as the hospital makes her husband's work easier, it also gives the community better medical care, so they both gain. I believe that the best efforts are achieved when the work is cooperative, for in this way the lay person knows that you are interested in his welfare. This is just one field of joint endeavor. No one doctor's wife can do all the community work asked of her, but she should attempt to evaluate the human equation of understanding the people in her community.

We know that our doctors are well trained and competent, but some do not always sell themselves to the public because they cannot or do not take the time to understand a patient's reaction. Here is where the wife in her social contacts, without ostentation, can be charitable and generous in her human concern and thus reflect her husband's concern.

I know of no other profession where a husband and wife are accepted to such a degree as a team, in the promotion of good will in the community, for in such team work the husband does the work and the wife interprets his health work by means of tact, service and understanding.

Being a doctor's wife has many privileges and compensations, but it also has its limitations, mostly in time and energy. It is difficult to make generalizations and evaluations, but all of us believe we are having a rare privilege trying to be a good one.

(Mrs. C. L.) Helen Oppegaard
Immediate Past President,
Woman's Auxiliary, MSMA

DOCTORS, HEART ASSOCIATIONS, AND UNITED FUNDS

As the American Heart Association approaches its second decade as a national voluntary health agency, we find its promise of continued success being threatened by a movement that is serious in nature and large in scope.

Just when we begin to glimpse where and how the answers to strokes, coronary disease and hypertension may be found, we are turned aside from our main task by the necessity of defending ourselves against an organized effort designed to regiment us into a single plan of fund raising. Knowing that doctors, of all people, demand for themselves and champion for others the right of fair and equal opportunity and the privilege of individual enterprise, I am addressing myself to you, the members of my own profession, in the

hope that you will help us to maintain the Heart Association as a free American institution.

I am referring, of course, to the effort now being made by United Funds to force the national voluntary health agencies into giving up their independent campaigns. However, at the outset I wish to make one point crystal clear: we in the heart associations are *not* fighting United Funds; we are striving to continue and expand a scientific program designed to conquer the cardiovascular diseases through the combined voluntary efforts of the medical profession and the public. We regard federated plans of fund raising, especially for local charity causes, as fully worthy of support, provided they are truly voluntary and not forced on either the people or the participating agencies. We certainly want all community chests to succeed, and will do everything in our power, short of participating actively in their campaigns, to help them accomplish their goals.

Now what has this matter of fund raising got to do with the medical profession? As the world becomes more complex and more anxiety ridden, people everywhere, including those here in the United States, are being asked to turn to government for "womb to tomb" security, including socialized medical care.

A major influence restraining this drift toward governmental domination has been the development of a unique and typically American institution, the national voluntary health agency. This is usually an association or society devoted to a limited or specific purpose, such as the prevention and control of a single disease. It often comes into being in response to a profound conviction on the part of individuals—laymen and physicians—that their combined efforts are needed to combat a major health menace. These citizens decide on their own to *do* something—not to rely solely on government. What could be more American than this?

The contributions to medicine made by the national voluntary health agencies during the past decade have been impressive. Polio appears to be on its way out. Cancer's early-detection campaign is saving an estimated 75,000 lives a year. In a half century, the National Tuberculosis Association has spearheaded a 90 per cent reduction in that disease. In just ten years, the Heart Fund has channeled over 25 million dollars into research which has produced vital new methods of diagnosis, prevention and treatment of cardiovascular diseases.

Now here is a very important point: by establishing such national voluntary health agencies, the American people have not only promoted health, they have also protected themselves, and especially the medical profession, from increasing governmental domination of the health field. The Heart Association, the Cancer Society, the Polio Foundation, and others, have acted as *buffers* between private medicine and governmental medicine.

I do not mean to deny to government an appropriate place in the medical field. However, I do believe that the medical profession owes a substantial debt to the voluntary health agencies for helping to preserve the primary interests of private medicine in matters of health.

By providing independent leadership and by giving counsel to governmental health agencies, such as the National Institutes of Health, the voluntary agencies have helped, not only to maintain the integrity of the medical profession, but also to channel the health activities of government into their proper areas and functions. The National Institutes of Health have not suffered; on the contrary they have profited through the existence of the voluntary health agencies. They did and still do look to these agencies to pioneer, to experiment, and to show the way in exploring the health needs of the nation.

The voluntary health agencies also serve as a powerful channel through which the value of the work and achievements of the medical profession and research investigators is made known to the public. Every agency, as a matter of policy, says to the public over and over again: "See your own physician; he is your best protection against disease."

Realizing that a doctor cannot ethically remind his patients that they need him, the health agencies can and do. They extol the family doctor as the first and best line of defense against disease and death, and they back him up with research, education and community service.

It is ironical, therefore, that United Funds have focused attention on the local physician and the local medical society as a point of attack in promoting their campaigns. What usually happens in a community is this:

A small body of citizens, usually local business executives, either self-motivated or persuaded by professional representatives of United Funds, become annoyed by "so many drives," and it is decided to reduce the number of these drives. The

national organization, known as the United Community Funds and Councils, then sends out information and workers to instruct the local group. With or without a preliminary "survey," these workers come up with the surprising answer that the public is in revolt against so many drives, and that a United Fund Plan of "One gift for all—one campaign for all" will solve all the local charity and welfare problems.

The local group are glad to believe that this is the answer to their problem, part of which usually includes the fact that the local Community Chest has been faltering, not to say failing. They are particularly glad to believe in the United Fund plan when they are further told how *easy* it will be. "No more door-to-door solicitations by weary volunteers; no more high-powered campaigns by a multitude of drives," they are told; "merely a single payroll check-off in industrial plants and places of work and the job is done for you."

On this basis, the local group enthusiastically set out to establish a United Fund. Shortly, however, they begin to run into difficulties. Cancer, Heart, and Polio, for valid reasons of national policy, decline to participate in the local United Fund campaign. And so a struggle is precipitated.

Those who start out believing that their objective is to obtain funds more easily for many good causes, suddenly find themselves attacking some of those very causes. As one point of attack, they focus on individual physicians or on local medical societies in an effort to induce them to endorse the United Fund. They use many devices, including personal influence and organizational pressure, to accomplish their purpose.

United Fund people often blame the previous failures of the Community Chest on the health agencies. "Here," they say, "is the reason we have been failing: the health agencies have been siphoning off funds from our community." (They conveniently forget that never in a single year have all the national voluntary health agencies combined received a per capita contribution of more than $1 from the American people.) "People just now happen to be interested in *health,*" they say; "it's a popular cause at the moment. We need it in our campaign to obtain enough money. The health agencies must go along with us, or we'll set up our own health causes and collect the money ourselves. After all, heart, cancer, polio, and the rest are just diseases and one cannot trade-mark a disease."

And so they set up a health "cause" solicitation as part of their campaign, leaving the public to believe that the Heart Association, the Cancer Society, or the Polio Foundation will actually receive the funds, despite advance public declarations by the voluntary agencies that they must decline such funds and will continue to conduct their independent campaigns. Ironically, in the process, United Fund promoters do what they profess to abhor; they establish yet another agency!

The pressures brought to bear by the United Fund people upon the voluntary health agencies in this connection have been almost incredible. They have openly proclaimed that rough pressure methods "with teeth in them" will be used against the agencies that do not participate in local United Funds. Their tactics have included economic threats against, and boycotts of, many private individuals, as well as business organizations. Thus they tell the public not only how to give, but where to give, when to give, and often how much to give.

In the face of such tactics, the national voluntary health agencies have been hard pressed to protect themselves. They have not wished to launch a counterattack, believing that two wrongs do not make a right, and besides they do *not* wish to fight United Funds. They have resorted heretofore merely to passive resistance, relying on the American people to recognize in time the value of the independent way and to find a solution other than regimentation.

Whether we like it or not, the medical profession is directly involved in this controversy. Medicine cannot continue to ignore or condone the threats to itself through the increasing attacks by United Funds on the voluntary health agencies. For United Funds are promoting a movement under which uninformed, though conceivably well intentioned, local laymen are entering directly into national medical fields of health and disease and deciding where and when funds should be spent for each purpose, and *how much.* United Fund people may understand local charity needs, but they know nothing about the requirements of the nationally coordinated programs of medical research being conducted by the voluntary health agencies.

During its early years, the Heart Association participated in over 450 United Funds, and sadly learned not only that the amounts collected were inadequate, but also that devotion and zeal were lost even among dedicated Heart Volunteers when

they succumbed to the siren song of "Once for all."

Today the Heart Association has withdrawn from all but 270 of these Funds. Based on the per capita giving in the remaining Funds, the Heart Association in 1957 would have raised less than half the amount it did raise had it participated in a United Fund everywhere. It therefore becomes forcefully apparent that the Heart program would have suffered a serious setback in research, not to mention all other phases of its work, had the Heart Association been forced to abandon its independence under coercion by the United Funds.

Fund raising, except by taxation, is *not* easy; indeed it should not be easy. Competition is the American way. Health needs like other needs must compete for public support. The law of supply and demand cannot be repealed, and the Heart Association is willing to accept this fact. We believe that the people will continue to supply the funds as long, but only as long, as a major health need exists. When the cardiovascular diseases are conquered, the Heart Association's work will be done.

In the meantime, may I remind you, my medical colleagues, that the Heart Association, and the other ethical national voluntary health agencies, are performing vital services for *you*. They are telling your story to the public; they are protecting you from governmental domination on one side, and from local dictatorship on the other. But most important, along with you they are leading the way towards the control of the major chronic diseases.

If United Funds are permitted to continue to undermine these efforts of the voluntary health agencies, research will dwindle and the conquest of disease inevitably will be delayed. The result will be the needless loss of hundreds of thousands of lives.

Every physician should give most thoughtful consideration to the problems created by the United Fund philosophy and tactics. Freedom is indivisible. It is for all, or for none. The medical profession will help to preserve its own freedom in the future if it insists now, through its county, state, and national organizations, that the ethical voluntary health agencies be freed of further coercion by United Funds.

Individual doctors, who wish to interest themselves and their patients directly in the work of the Heart Association, will receive not only an enthusiastic welcome, but also the satisfaction of contributing in an important way to a volunteer group, whose sole purpose is to help all physicians in their fight against disability and death.

ROBERT W. WILKINS, M.D.
President, American Heart Association

THE ROLE OF THE BASIC SCIENCES IN MEDICINE

IV. Recruitment of Basic Medical Scientists

There is an astounding paradox in the very considerable increase in the availability of money for basic scientific research in the United States and the increasing difficulty in recruitment of top flight young brains into basic medical science careers. One would have supposed that the increased flow of money into basic science would have resulted in attracting a correspondingly larger number of bright young people into such careers. Actually, the basic medical sciences have not fared very well in this regard. There are undoubtedly many factors involved in this result. For one thing, the economic rewards from the practice of medicine have increased at least twice as much as have the salaries of medical scientists and therefore the "economic penalty," so to speak, of an academic career has increased sharply in the last ten years. Consequently, fewer medical graduates go back into basic science careers. Another factor may be the greater allure today of physics and chemistry for scientifically minded youngsters. The spectacular achievements in the fields of atomic chemistry and physics in recent years have caught the imagination of many bright young minds. Furthermore, there is a syphoning off from graduate study in any field of science by the immediate allure of jobs for college graduates in chemistry, physics, mathematics and engineering in various branches of industry. The Federal government put over two billion dollars into applied research and development in 1957 as compared with a little over two hundred million into basic research. The applied research money unquestionably drained talent from basic research. When a bachelor's degree graduate can immediately get yearly salaries in industry greater than he could expect in academic work after earning a doctorate, it is not surprising that many would choose the easier course. Especially if real or expected family responsibilities are on his mind, the young man will think a long time

before rejecting immediate economic comfort for greater long-term intellectual satisfaction.

A further factor in the situation is the undoubted deterioration of teaching in the sciences and in mathematics at the secondary school level in the United States. School Boards have not been willing to put the increased support that they have poured into athletics, manual arts, home economics, for example, into their science programs. In fact, they have frequently built up these other programs at the expense of the development of the subjects with intellectual content.

In this era of scientific and technological development in the United States, the community cannot afford to lose the services of the half of the superior brains among high school graduates who do not go to college. Three years ago Dr. Alan Waterman, Director of the U. S. National Science Foundation, asked "Why do more than half of our high school graduates deemed fully qualified for college work fail to go to college? We already know that only part of the problem is economic. One of the problems is that of motivation. What other factors are involved and what can be done to correct them? There is now a critical shortage of teachers of mathematics and science in the high schools. Clearly, greater interest in science and mathematics could be stimulated by improved teaching."

The medical profession in the United States has a stake in this situation and is in a position to do something constructive about the problem. Physicians have the same reasons that every citizen has for wanting to see the community prosper. Each physician who is a parent has the same interest as every other parent in wanting the best of educational opportunities for his children. But the physician has an opportunity, shared only by other scientifically trained persons in the community, to speak with some competence based upon education and experience about the absolute necessity to improve educational opportunities in mathematics and the sciences at the high school level. Without becoming political office-holders, physicians can nevertheless exert great influence in their communities by expressing their informed opinions, especially upon nonpartisan issues such as educational policy and support. Members of Boards of Education themselves are almost invariably "non-experts" and, failing assistance from competent community advisors, must take most of their ideas from school administrators who are themselves subject to great pressures. For example, the pressure of alumni and others to promote athletics at the expense of scholarship is virtually a universal phenomenon. Then there are the pressures from special interest groups among secondary school teachers themselves, such as the home economics and the manual arts groups. Frequently, State Departments of Education are of no great help because the professionals in educational administration have in general had no background whatsoever in science themselves and have an inadequate comprehension of the problem. This, it would appear, is one of the prime reasons for the crisis in scientific manpower which this country faces today.

The physician and other persons with scientific training in every community in the land could perform an important patriotic function by working at the local level to improve science teaching in the secondary schools. Only by such a massive attack on the problem will the general scientific manpower shortage be corrected, and specificially only by encouraging more creative young minds to go into the basic medical sciences will the future of medical progress be secure.

MAURICE B. VISSCHER, M.D.

THE PATIENT WITH ACUTE MYOCARDIAL INFARCTION

II. Management of the Acute Phase

When the diagnosis of acute myocardial infarction has been confirmed with the aid of the electrocardiogram and determinations of serum transaminase, the second phase of management confronts the physician. The diagnosis, when established, does not carry with it an optimistic therapeutic outlook such as is true at this time for many of the infectious diseases and even for some of the neoplastic diseases. As physicians we must accept the fact that acute myocardial infarction is the consequence of an unknown quantity and quality of circulatory impairment to the nutrient supply of the myocardium and, consequently, both immediate and long-term prognosis cannot be confidently predicted for any individual patient. We also must subscribe to the seemingly heretical fact that many individuals will survive and recover full cardiac functional reserve without treatment or even without recognition that myocardial infarction has occurred, whereas others who have re-

ceived optimal care by modern medical standards will die of acute myocardial infarction. In brief, the most important apparent factor determining recovery or death of this type of patient is related to this unpredictable inherent capacity of the individual's heart to continue to function with a life sustaining rhythm and with sufficient strength to support life.

Now that the balloon of our therapeutic excellence has been punctured, let us in part repair the puncture by indicating the value and possible accomplishments of the physician in the management of the patient with acute myocardial infarction. Although the physician's care and treatment may not be specifically curative for the heart attack, it continues to be the important factor in the management and prevention of complications and in that significant phase of the art of healing which is the alleviation of suffering. During acute myocardial infarction the attending physician can and should play a role similar to that of the director of a construction project. With careful and continuous observation of his project, which is the healed patient, he will cause to be utilized at the proper time the measures needed for any exigency which arises. At the appropriate time he will utilize drugs for the relief of pain, oxygen, and sedatives. He will be alert to the appearance of shock or cardiac arrhythmias and be timely in his use of vasopressor drugs and anti-arrhythmic drugs. Evidence of failing cardiac compensation will be attacked at his discretion with restriction of sodium, digitalis preparations, and diuretics. The patient's morale, disturbed by his unaccustomed rest program and sudden illness, will be supported by an optimistic attitude as well as sufficient explanation to prevent worry and apprehension.

There can be no routine or usual program which is honestly applicable for management during hospitalization. Observations at frequent personal examinations and by the nursing personnel, and data supplied from laboratory examinations must all be carefully weighed and used in making decisions concerning the measures which will best support the patient in his acute illness. Such careful individualization reduces the incidence of the more frequent errors of omission and commission. The mildly ill patient will not be overtreated or overly restricted, and the early signs of complicating problems will be recognized and adequately managed before they threaten serious consequence.

The prescription of anticoagulant drugs during myocardial infarction has now come of age with 10 years of application. In addition to the actual prophylactic value of this measure, the management of such therapy is improving the over-all care of the patient since careful regulation of the anticoagulant insures careful observation of the patient and consequent early awareness of any irregularities in his convalescent course. Although the nonspecificity of anticoagulant therapy is well recognized, and this, when taken together with the potential hazard of hemorrhage, has led to understandable doubts as to its necessity by its critics, it still remains the principal addition to the medical management for the heart attack which has appeared in this generation. In the absence of the well-recorded contraindications and with the availability of an adequate laboratory for the frequent determination of prothrombin activity, anticoagulants offer the only reasonable approach at this time directed at prevention of vascular occlusive disease of a thrombo-embolic type. With the limited ability to make specific alterations in the vascular disease resulting in myocardial infarction, the theoretic nonspecific benefits of anticoagulants should not be denied any patient during his hospitalization for acute myocardial infarction when contraindications are absent.

Milton W. Anderson, M.D.

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES

After almost three years of planning, the Educational Council for Foreign Medical Graduates opened its doors on October 1, 1957, at 1710 Orrington Avenue, Evanston, Illinois.

What Functions Will It Serve?

It will distribute to foreign medical graduates around the world authentic information regarding the opportunities, difficulties and pitfalls involved in coming to the U. S. on an exchange visitor or exchange student visa in order to take training as an intern or resident in a U. S. hospital, or coming on an immigrant visa with the hope of becoming licensed to practice.

It will make available to properly qualified foreign medical graduates while still in their own country a means of obtaining ECFMG certification (a) to the effect that their educational credentials have been checked and found meeting minimal standards (eighteen years of formal edu-

cation, including at least four years in a bona fide medical school), (b) that the command of English has been tested and found adequate for assuming an internship in an American hospital, (c) that the general knowledge of medicine as evidenced by passing of the American Medical Qualification Examination is adequate for assuming an internship in an American hospital.

It will provide hospitals, state licensing boards, and specialty boards which the foreign medical graduate designates, the results of the three-way screening available.

What Functions Will It Not Serve?

It will not serve as a placement agency either for interns or residents. Placement arrangements must be made by the foreign medical graduate directly with the hospital of his choice or through the National Intern Matching Program.

It will not attempt to evaluate the teaching program or inspect any foreign medical school. Its program is based not upon evaluating the school from which the candidate graduated but upon evaluating the professional competence of the individual.

It will not act as an intercessor for foreign medical graduates having problems under discussion by state boards of medical licensure or specialty boards. If the foreign medical graduate asks that the results of his three-way screening be sent to a designated board this will be done, but the ECFMG has no right and no desire to review the decisions of the properly constituted state licensing boards and American specialty boards.

Who Is Sponsoring the ECFMG?

Sponsors of the new agency are the American Hospital Association, the American Medical Association, the Association of American Medical Colleges and the Federation of State Medical Boards of the United States. Providing funds to support it through the first two years of its existence are the sponsoring agencies and the Kellogg Foundation, and the Rockefeller Foundation.

The ECFMG has been legally incorporated in the State of Illinois and is operating in the first year of its provisional approval as a tax exempt organization under Section 501 (c)(3) of the *Internal Revenue Code of 1954*. The ten-member Board of Trustees includes two representatives from each of the four sponsoring agencies and two representing the public at large (one named by the Department of Defense, the other by the Department of Health, Education and Welfare). The President of the Board of Trustees is Dr. J. Murray Kinsman, Dean of the University of Louisville School of Medicine. The Executive Director is Dr. Dean F. Smiley, former Secretary of the Association of American Medical Colleges.

What Are the Mechanics of the Examination?

The ECFMG's Examination Committee will select the items for two examinations a year from the National Board of Medical Examiners' pool of questions. The National Board of Medical Examiners will use as many of its fifty presently constituted U. S. examination centers as will be required and will establish examination centers abroad in numbers as found required to meet the need.

The National Board of Medical Examiners will proctor the examination, score and analyze the results, and turn them over to the ECFMG's Examination Committee for final evaluation and action.

What is the Charge to Be?

Foreign medical graduates already in this country will be billed for $50.00 covering the cost of the three-way screening. This will include $15.00 for the evaluation of credentials and $35.00 for the American Medical Qualification Examination.

Foreign medical graduates abroad will be billed the $50.00 only when they pass the screening, and receive a position in an American hospital or are otherwise earning American dollars.

American hospitals receiving screened candidates will be billed $75.00 for each such candidate accepted.

What Are the Target Dates for Various Services?

The answering of correspondence began October 5 and has been kept current since that time. The translation, interpretation and evaluation of credentials have already begun.

The first American Medical Qualification Examination for foreign medical graduates already in this country was held March 25, 1958. The second will be held September 23, 1958. The target dates for the 1959 examinations for foreign medical graduates both here and abroad are set for February 17 and September 22.

PHYSICIAN-HOSPITAL RELATIONSHIP
A Resolution

WHEREAS, a wise and foresighted legislature of the State of Minnesota has written laws in Minnesota prohibiting the practice of medicine by corporations and individuals not licensed physicians, and

WHEREAS, the American Medical Association has repeatedly studied the problem and has stated in 1943 that the "House of Delegates of the American Medical Association is opposed to the division of any branch of medical practice into so-called technical and profession factions," and later in 1951, that "the practice of anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine in the same category as the practice of surgery, internal medicine or any other designated field of medicine," and in 1955 reaffirmed its position on these matters.

THEREFORE BE IT RESOLVED, that the Minnesota State Medical Association first, officially recognizes the specialty of Anatomical and Clinical Pathology as the practice of medicine; second, reaffirms the philosophy that in-hospital and outpatient diagnostic laboratory services are in fact the practice of medicine and thirdly, in future contracts or actions relating to laboratory medicine actively reaffirms the belief in the legal control of all medical laboratory facilities in the State of Minnesota by licensed doctors of medicine.

Passed by: Committee on Hospital and Physician Relationships, Committee on Resolutions, House of Delegates, Minnesota State Medical Association, May 23, 1958.

ARTERIOGRAPHY AND CARDIOANGIOGRAPHY

(Continued from Page 643)

Case 3.—A twenty-eight-year-old woman who had known congenital heart disease since childhood. Five years prior to her recent hospitalization, cardiac catheterization suggested an interventricular septal defect with pulmonic stenosis. Surgery was undertaken at that time to correct the pulmonic stenosis. The surgical impression was that of an aortic-pulmonic window.

Recent catheterization studies still suggested an interventricular septal defect with pulmonic stenosis. Selective angiography was done (Fig. 3.) to evaluate the ascending aorta. No aortic-pulmonic window or patent ductus was found, which confirmed the catheterization findings. Incidental delineation of the coronary vessels shows another use of this procedure for study of many portions of the vascular bed. Several illustrations of coronary artery studies in dogs will not be included in this paper.

Case 4.—A sixty-eight-year-old man who developed a pulsating mass in the right hemipelvis. Percutaneous aortography was considered too dangerous.

Selective angiography (Fig. 4.) was performed by inserting a catheter to a point below the renal arteries. This study confirmed the presence of a fusiform aneurysm of the right external iliac artery, which was subsequently removed at surgery.

Case 5.—A sixty-year-old man, known to have a carcinoid syndrome, developed gradually increasing ascites and dependent edema. In order to exclude a physical obstruction of the inferior vena cava, which might be amenable to surgery, a catheter was introduced into the inferior vena cava. The latter, including the portal system and right heart (Figs. 5a and 5b), were completely delineated, and no organic obstruction was present.

Summary

The above cases illustrate only a few applications of angiography in the preoperative work-up of diagnostic problems.

737 E. 22d Street
Minneapolis 4, Minnesota

EPITHELIUM OF MALHERBE

(Continued from Page 652)

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President's Letter

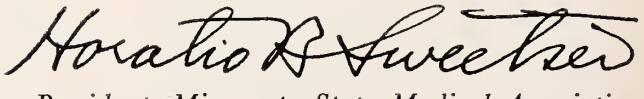
COMMUNICATION IN MEDICINE

One-hundred and some years ago, the American Medical Association was formed and medicine became a relatively homogeneous group. About fifty years ago, segmentation began to appear and physicians began to group themselves according to specialties less broad than the profession of medicine. As this process continued, the ways of the various specialties diverged further and further, until about ten years ago certain members of the profession had trouble getting their patients into hospitals or caring for them after they were there. Understanding among the groups had diminished to a low point. Communication between the segments almost ceased. The last specialty group organized about that time, and things have improved since then. Throughout this period, various segments of the profession at times have taken it upon themselves to speak for the profession as a whole—indeed this still happens occasionally—sometimes to the embarrassment of the others.

Before World War II, lay health organizations began to be formed, usually devoted to a single disease. This movement has spread until there is hardly a disease left without a lay society to study, to popularize and to try to prevent it. Most are sincere, hard working and helpful. A rare society seems to exist for the profit of its promoters. But regardless of their value—and most are valuable—they also tend to speak for medicine, or at least that part of medicine in the general area of the disease in which they are interested. Unfortunately the fields tend to overlap, or the problem becomes less acute and the organization has to expand its field to continue to exist. Competition follows, for areas of activity and for public finances and for professional talent and advice.

"Third parties" have entered into the economic phases of medicine.

In all these areas—the professional specialty groups as opposed to the general profession, and the specialized lay organization, scientific and economic, as opposed to the profession of medicine in all its branches—communication between the groups would decrease the inevitable friction, the unnecessary duplication, and the unrewarding competition. If any part of the profession can serve as a clearing house, as a center of communications, surely it must be the organization of all the physicians of the state, the State Medical Association. This is not to say that the State Medical Association should make any attempt to control all the ideas, but it is to say that there should be far more effective communication between the elements of the profession and between the outside agencies affecting the profession and the profession itself. And it is to say that the logical and the reasonable center for this communication is the State Medical Association as represented by its House of Delegates and more specifically by its Council.



President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

NEW TRIAL ON SALE OF DRUGS ORDERED BY COURT

A new trial has been ordered by the Minnesota Supreme Court in a case which the Hennepin County District Court had previously ruled that supermarkets and grocery stores could sell certain drug items.

Dissenting from the decision was Chief Justice Roger Dell.

Products involved in the case are: Bufferin, Aspirin, Anacin, Bromo-Seltzer, Alka Seltzer, Pepto-Bismol, Pinex, Murine, Ex-Lax, Feen-a-mint, Sal Hepatica, Bromo-Quinine, Asper-Gum, Lysol, 4-Way Cold Tablets, Castoria and Vick's Va-Tro-Nol.

The Court majority, in ordering a new trial, held that the state should have been permitted to present whatever evidence it had to show, whatever danger, if any, the uncontrolled and unsupervised sale of the items presented to the public health.

Justice Dell said the majority opinion "admits that the state failed to present a single instance in which the use of any item enumerated in the complaint, purchased in a grocery store or supermarket, injured the safety, health, comfort, or welfare of anyone."

The case was brought by the state against Red Owl Stores, Inc., and Groves-Kelco, Inc., a wholesale distributor. The state sought a ruling to bar sale of the products by stores other than drug stores.

PHARMACY LAWS CRITICIZED

An organization known as the Affiliated Merchants Association of Minnesota, Inc., has been sending circulars and other printed material to grocery stores and other outlets throughout Minnesota.

These circulars criticize the state laws governing the sale of medicine, as well as the regulations of the Board of Pharmacy. The Affiliated Merchants Association holds that the State Board of Pharmacy seeks to prohibit the sale of drugs and medicine in—all—retail outlets other than drug stores and it plans to eliminate emergency health station permits and licenses.

GOVERNMENT CHARGES WONDER DRUG PRICE-FIXING

The United States Government has charged six major drug firms with fixing the prices of wonder drugs at arbitrary, artificial, and non-competitive price levels.

The charges brought forth by the Federal Trade Commission were the result of a two-year study.

A prompt denial by industry spokesmen followed the government action.

The commission contends that the six accused firms have an absolute monopoly in sales of tetracycline drugs which include Aureomycin, Terramycin and Achromycin.

The agency said the tetracyclines are the largest selling antibiotics by dollar volume. Developed within the last ten years, they are called broad spectrum drugs because they attack a wide range of disease-breeding microbes.

The accused companies are: Chas. Pfizer & Company; American Cyanamid Company; Bristol-Myers Company; Olin Mathieson Chemical Corporation, all of New York City; Bristol Laboratories, Inc., Syracuse, New York, and the Upjohn Company, Kalamazoo, Michigan.

The commission action is aimed at cease and desist orders requiring the companies to stop the alleged price fixing. Commission complaints never call for punitive action and are civil rather than criminal in nature.

Cyanamid and Pfizer accounted for more than 47 per cent of all sales of antibiotics in 1956, the most recent year for which statistics were cited in the commission's study.

Cyanamid manufactures drugs through its Lederle Laboratories division. Olin Mathieson pharmaceuticals are made by its E. R. Squibb & Sons division. Bristol-Myers and Bristol Laboratories are under a single management.

Industry statements compiled by the Associated press included these:

W. G. Malcolm, President of Cyanamid: "Cyanamid has not engaged in any price fixing and has not em-

ployed any unfair methods of competition or any unfair or deceptive acts or practice in its pricing or its use of patents and licenses in the conduct of its antibiotic business."

John E. McKeen, President of Chas. Pfizer and Company: "Pfizer has never engaged in a conspiracy, never misused its patents, never fixed prices, and wields no monopolistic powers."

Dr. E. Gifford Upjohn, President of the Upjohn Company: "This complaint has been studied in detail by officials of the Upjohn Company, who are convinced that the charges are completely unfounded. It is the intention of the Upjohn Company to defend its position and prove conclusively that these charges are untrue."

Frederic N. Schwartz, President of Bristol-Myers Company: "I can state without qualification that these charges are baseless and that this action will be defended vigorously with all the resources at our command."

Industry must answer the complaint within thirty days. October 1 has been tentatively set as a hearing date.

The 361 page FTC report noted that repeated price cuts in early antibiotics, including procaine penicillin and Streptomycin, were made prior to 1951. Comparable drops since that date were not forthcoming in spite of significant shifts in their relative market importance.

The report further stated that in 1956 the industry had profits before taxes of thirty-seven cents on each dollar of sales of broad spectrum antibiotics. The figure for the newest penicillin products for which companies have exclusive manufacturing rights was even higher . . . forty-two cents.

On the other hand, production of older penicillins was carried on at a loss from 1952 through 1956. And Streptomycin production ran a deficit from 1953 through 1956.

For all antibiotics, according to the report, pre-tax profits averaged 28.5 per cent of sales in 1956 compared with 18.3 per cent for the chemical industry and 14.6 for all manufacturing industries.

In recent years, pre-tax profits on antibiotics have ranged from 19.3 cents per dollar of sales in 1952 to 34.5 cents in 1951.

The report shows that actual production costs of wonder drugs have dropped since 1950, but that sales and promotion, research and administrative outlays of drug firms have risen.

Production absorbed 39 cents of each sales dollar in 1956 compared with 44.4 cents in 1950. Sales and advertising expenses amounted to 21.6 cents, up from 12.9 cents in 1950. Research outlays increased to 6.7 cents from 4.4 cents and administrative and other costs rose to 8.7 cents from 7.6 cents.

The report also spelled out markups on wonder drugs. Drug companies generally sell their products to wholesalers from 15 to 21 per cent less than the price which wholesalers charge retailers. The margin between the price to retail druggists, hospitals, and physicians and the list price for consumers is ordinarily 40 per cent.

VARIATIONS IN DRUG PRICES

Variations in the prices of various drugs and who is to blame were discussed in a recent article published in *Drug Topics,* the bi-weekly newspaper of the retail druggist trade.

The article pointed out that a prescription with ingredients costing $1.40 varied in cost to the patient all the way from $1.75 in Washington, D. C., to $7.50 in Bloomfield, New Jersey. Another example cited a prescription in which ingredients cost 50 cents, varying in the price paid by the patient from $1.50 in Baltimore, to $3.00 in Billings, Montana.

Prices for a bottle of fifty tranquilizer tablets ranged from 95 cents to $4.95 in New York City.

A recent Public Health Information Foundation survey indicates that 25 per cent of the persons who complained about high drug prices blamed the retail druggist, 10 per cent blamed doctors, and one person in fourteen blamed the manufacturer.

The following answers were received by Alfred C. Roller, writer for the North American Newspaper Alliance, in a poll which he conducted among representatives of the key group.

The New York Citizens Committee for Children reported physicians often practiced the writing of prescriptions calling for brand name drugs at high prices, which would be lower priced if called for by their scientific names.

The medical director of a large New York hospital echoed the belief and said even further economies could be made if doctors would write prescriptions only for the amount of a drug needed instead of for larger quantities often wasted.

Representatives of the drug manufacturing industry declared high prices are necessary to pay for the research which develops the drugs. More than $1.25 million was spent in such pursuits last year, and it must be paid for, they say.

They also point out that although consumer prices have increased ninety-eight per cent since 1935, the cost of prescriptions rose only 37 per cent.

Calvin Berger, President of the American College of Apothecaries, declared that many overcharges are "due to ignorance rather than a deliberate attempt to overcharge."

Calling for a prescription-pricing system, he pointed out that under present practices, it is impossible for a druggist to fill a prescription for less than a dollar and show a profit.

Representatives of the retail druggists pointed out that they must carry large investments in drugs to fill their prescriptions, and that many of the drugs do not turn over fast enough to make a profit unless there is a high charge to cover the investment costs. Many drugs which move slowly become dead stock. Someone has to pay for them, too, the druggist pointed out, and that someone is usually the customer.

HEALTH INSURANCE ABUSES PROVE COSTLY

Needless costs, estimated at $100,000,000 annually, are being suffered by the health insurance industry because of hospitals and physicians who "first check a patient's insurance before setting their fees."

This fact was recently disclosed in an address presented by Allen Dorfman, President of the Union Insurance Company at a National Association of Insurance Commissioners meeting in Chicago.

Dorfman suggested the following solutions:

1. A pooling arrangement in which all health insurance companies band together to protect themselves from high-risks and overcharging, similar to pooling arrangements now in effect by auto insurance companies.

2. The filing of rate schedules by all hospitals and physicians, showing exact fee and cost structures. This would eliminate "selective" charges by physicians who "check and charge" accordingly. It would also protect against what Dorfman described "current hospital practices of padding 'miscellaneous' charges for drugs, medicines, laboratory fees, et cetera."

According to Dorfman, hospitals and doctors equally share responsibility in abuse of health insurance benefits "with needless costs estimated at $100 million a year."

COST OF LIVING RISES 105 PER CENT IN TWENTY YEARS

Living costs have risen an average of 105 per cent in the twenty-year period between 1938 and 1958, including World War II and the Korean War. This fact was disclosed in an Associated Press dispatch, dated July 24, 1958.

The survey noted that on the average, something which cost one dollar in 1938, now costs $2.05.

According to the cost of living index released by the Federal Government during the last week of July, a rise of one-tenth of one per cent was noted from May to June of this year. This marks the twentieth living cost rise record set in the last twenty-two months.

Statistics prepared by Government experts show that from 1938 to 1943 consumer costs rose 23 per cent; from 1943 to 1948, 39 per cent; from 1948 to 1953, 11 per cent; and from 1953 to 1958, under the Eisenhower administration, 8 per cent, a composite of many different changes.

During these two decades, the rise in cost of various family budget items exceeded the 105 per cent living cost average, while others did not advance accordingly.

The cost of gas and electricity rose only 11 per cent. However, during that period, the cost of coal and fuel oil jumped nearly 129 per cent.

Hospital costs rose nearly 300 per cent; doctor fees increased 84 per cent; men's haircuts, 206 per cents; gasoline, 69 per cent; household appliances, 33 per cent; newspapers, 124 per cent; and movie admissions, 120 per cent.

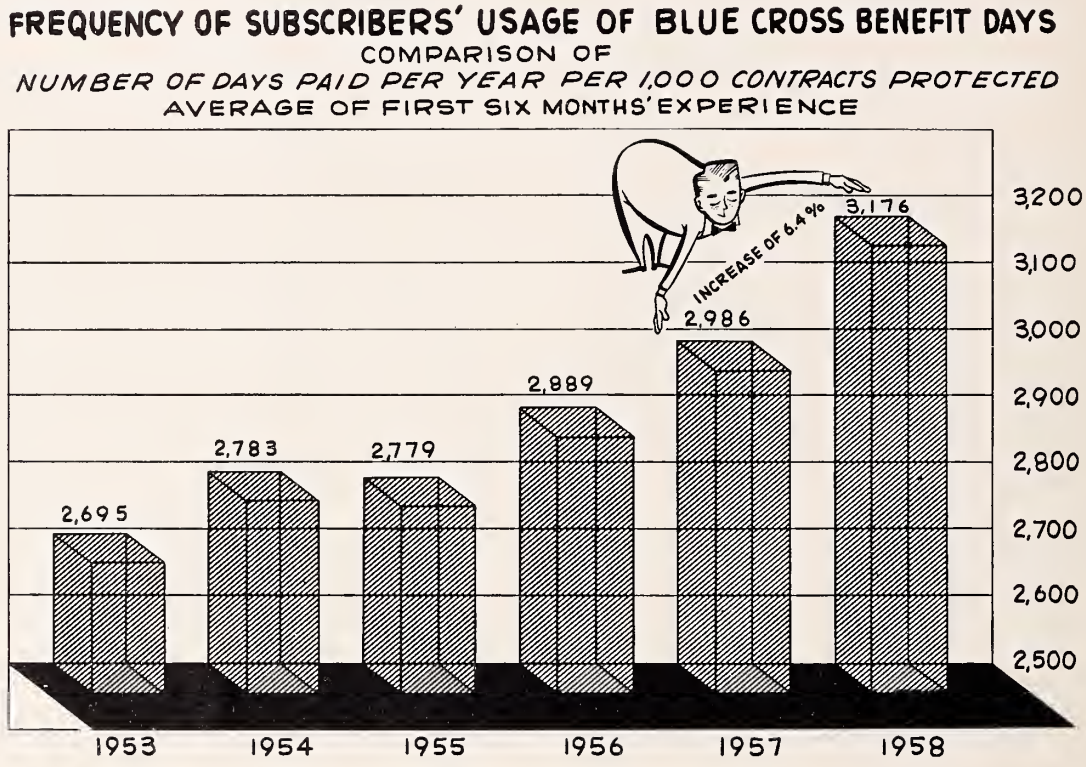
Cost of men's clothes, however, rose 110 per cent; women's, only 78 per cent.

In the 1953-58 period, food has increased 7.8 per cent; housing, 8.6; rents, 11; gas and electricity, 9.7; coal and fuel oil, 6.3; and clothing, 1.8 per cent. Hospital costs rose 33 per cent; hospitalization insurance the same; shoes, 12.7; haircuts, 23.1; movies, 24; and newspapers, 20 per cent.

In the past five years, substantial price declines were also noted. Appliances, probably due to price discounts, declined 15 per cent; including TV sets, 6 per cent; radios, 10 per cent; refrigerators, 33 per cent; vacuum cleaners, 23 per cent.

A pair of women's nylon hose now costs 13 per cent less than five years ago; men's pajamas, 1 per cent less; bedsheets, 8.3 per cent less; and used cars, 12.6 per cent less.

Minnesota Blue Shield subscribers used their contracts much more often during the first half of 1958 than they did during the same period in 1957.



During the first six months of 1958, Blue Shield received Medical Service Reports involving 180,604 eligible services of physicians rendered to subscribers, or 31,245 services more than the number which were paid by the Plan during the first half of 1957. For these services Blue Shield paid doctors $4,919,097, an average of over $819,000 each month.

In the same six months of 1957, allowances were provided for 149,359 services to subscribers. Blue Shield payments for these services in 1957 totaled $4,218,673. Both the number of physicians' services and Blue Shield payments for their services during the first half of 1958 exceeded by over 16 per cent the number of services and the amount paid for them during the first six months of 1957.

While the number of Blue Shield participant subscribers increased 26,362 between July 1, 1957 and June 30, 1958 or from 849,556 to 875,918, the number of Plan B subscribers increased 27,989. Plan B participant subscribers numbered 90,391 as of June 30, 1958 as compared with 62,402 such subscribers on the same date last year.

Minnesota Blue Cross payments to hospitals for participant subscribers' care continues at an all time high through the first six months of 1958. Over 108,600 participant subscribers received in excess of $16,800,000 in Blue Cross benefits for 676,386.7 days of hospital care during this first six months period.

This year to date utilization represents 510 cases and 3,176 days paid per year per 1,000 contracts protected, an increase of 6.4 per cent in frequency of subscribers' usage compared to the 488 cases and 2,986 days paid per year per 1,000 contracts protected during the same period of the year 1957.

The accompanying chart shows the five-year trend of frequency of subscribers' usage in terms of the number of days paid per year per 1,000 contracts protected during the first six months of the years 1953-1958.

The increase in frequency of subscribers' usage of Blue Cross benefits is a major factor in the spiraling trend of Blue Cross payments to hospitals.

Controls Stress

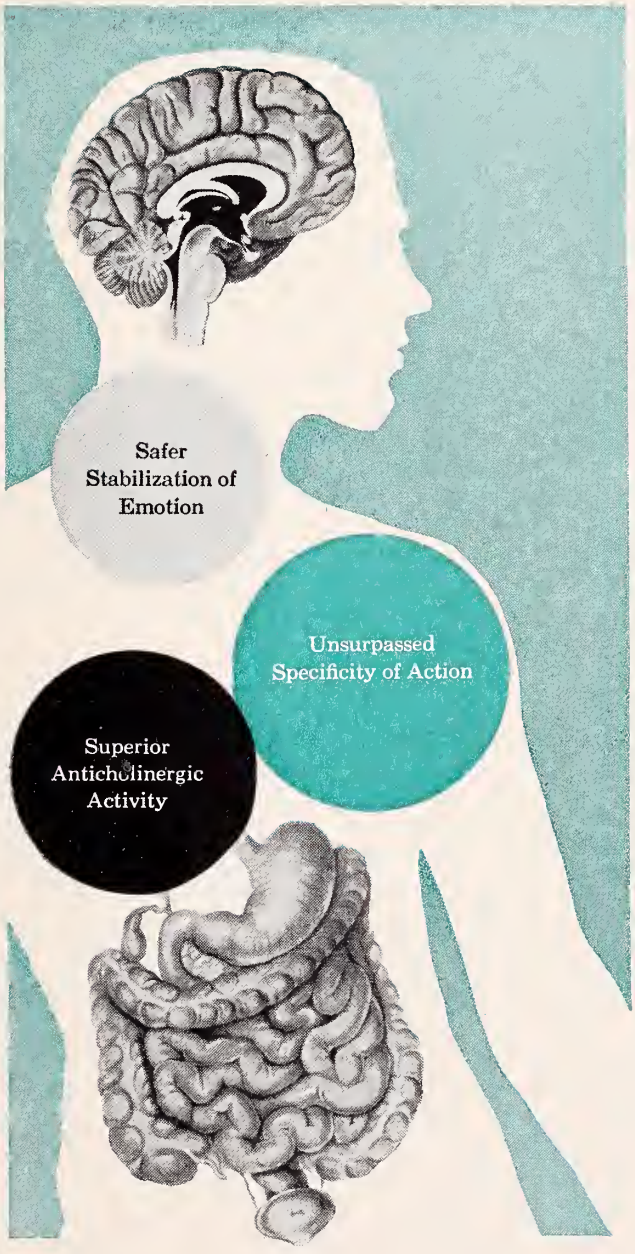
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Pro-Banthine has won wide clinical acceptance as the most effective drug for controlling gastrointestinal hypermotility and hypersecretion.

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The combination of each drug in fully effective doses in Pro-Banthine with Dartal gives a new means of approach to the medical management of functional gastrointestinal disorders mediated by the parasympathetic nervous system.

Specific Clinical Applications: Functional gastrointestinal disturbances, gastritis, pylorospasm, peptic ulcer, spastic colon (irritable bowel), biliary dyskinesia.

Dosage: One tablet three times a day.

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Committee Action

First Aid and Red Cross
Blood and Blood Banks
Maternal Health

Following is a brief statement regarding the various activities in which the Committee on First Aid and Red Cross and the Committee on Blood and Blood Banks participated in 1957.

Committee on First Aid and Red Cross

The problem of ambulance care was referred to the Committee on First Aid and Red Cross, and an exhibit was prepared and shown at the annual state meeting held in Minneapolis May 22, 23 and 24, 1958. Various problems which arise in connection with this project will be studied and dealt with in the future. The council of the State Medical Association has approved of this committee's offering what help it can to improving ambulance care in the state.

Committee on Blood and Blood Banks

The Committee on Blood and Blood Banks has been more or less involved with the civil defense problem of blood transfusion in case of disaster. The first fundamental step has been taken by the approval of the House of Delegates of the Committee's recommendation that all citizens of Minnesota be blood grouped and the Rh factor determined without compulsion. This will permit a solution of what otherwise was an impossible situation of making arrangements for blood transfusions in case of disaster. For one reason or another, this Committee's work is never finished.

JOHN S. LUNDY, M.D., *Chairman*

Committee on Maternal Health

During 1957, the Committee on Maternal Health continued their state-wide study of maternal deaths through their sub-committee, the Minnesota Mortality Study Committee.

The Committee approved a study of the influence of aseptic meningitis (ECHO 9) during pregnancy on the incidence of congenital defects. The study was carried out over a three-and-a-half month period by the State Board of Health.

The Committee sponsored two Round Table discussions at the 1958 annual meeting of the Minnesota State Medical Association, one relating to obstetric hemorrhage, and the other to perinatal mortality.

Contemplated activities for 1958 include (1) a continuation of the maternal mortality studies and (2) the carrying-out of a sampling of hospital obstetric records throughout the State to evaluate completeness of workup and treatment of the patient. This sampling will be done by members of the Committee. Following this study, an attempt will be made to reach conclusions as to what the proper record should embody.

The establishment of an Obstetric Consultation Panel made up of acceptable consultants is contemplated for 1958. Approval of the Council of the Minnesota State Medical Association will be sought, and the Committee will attempt to designate consultants who will serve on a fee basis (payable by the State Board of Health when necessary) so that any physician in the State may have available obstetric consultation within a radius of fifty to seventy-five miles.

JAMES J. SWENDSON, M.D., *Chairman*

WEBER-CHRISTIAN DISEASE

(Continued from Page 650)

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CAPSULES (black and white)
250 mg., 125 mg.

ORAL SUSPENSION (orange flavored)
2 oz. bottle, 125 mg. per tsp. (5 cc.)

PEDIATRIC DROPS (orange flavored)
10 cc., 5 mg. per drop (100 mg. per cc.)
Calibrated dropper

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glucosamine potentiated tetracycline with nystatin

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For patients susceptible to monilial superinfection.

COSA-TETRACYDIN*

glucosamine potentiated tetracycline-analgesic-antihistamine compound

CAPSULES (black and orange)
each capsule contains:

Cosa-Tetracyn	125 mg.
Phenacetin	120 mg.
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*Trademark

Meetings and Announcements

MEDICAL MEETINGS

State

Conference on Electrical Techniques in Medicine and Biology, eleventh annual session, Nicollet Hotel, Minneapolis, November 19, 20 and 21, 1958.

NATIONAL

Academy of Psychosomatic Medicine fifth annual meeting, Park Sheraton Hotel, New York City, October 9-11, 1958.

American Association of Medical Assistants, Second Annual Meeting, Palmer House, Chicago, Illinois, October 30, November 1 and 2, 1958. All Medical Assistants are cordially invited to attend.

American College of Gastroenterology, 23rd Annual Convention. Jung Hotel, New Orleans, La., October 20, 21, 22, 1958.

American College of Surgeons, 44th annual Clinical Congress, Chicago, Conrad Hilton Hotel, October 6-10, 1958.

American Rhinologic Society, fourth annual meeting, Palmer House, Chicago, Illinois, October 17-18, 1958.

Chicago Medical Society, Postgraduate Courses, 86 E. Randolph Street, Chicago 1, Illinois. Medicine—October 27-31, 1958, and Surgery—November 3-7, 1958.

Fifth Annual Conference of Mental Health Representatives of the State Medical Associations sponsored by the AMA Council on Mental Health, November 21 and 22, 1958, Drake Hotel, Chicago.

Gerontological Society, Inc., Bellevue Stratford Hotel, eleventh annual scientific meeting, Philadelphia, Pennsylvania, November 6, 7, and 8, 1958.

Mississippi Valley Medical Society, 23rd Annual Meeting. Hotel Morrison, Chicago, Illinois, September 24, 25, 26, 1958.

National Society for Crippled Children and Adults, 1958 convention, November 16-20, Statler Hotel, Dallas, Texas.

One-day course in Cardiac Resuscitation, Emory University School of Medicine, Atlanta, Georgia, October 3, 1958. Write Postgraduate Education, Emory University School of Medicine, 69 Butler Street, SE, Atlanta 3, Georgia, for further information.

Orthopedic Surgery and Fracture Postgraduate Course, University of Oklahoma Medical School Auditorium, Monday, September 29, 1958.

Second Oklahoma Colloquy on Advances in Medicine, Arthritis and Related Disorders, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma, November 12, 13, 14 and 15, 1958.

Western Surgical Association, annual meeting, Hotel Kahler, Rochester, November 20, 21 and 22, 1958.

INTERNATIONAL

The international College of Surgeons, fourth Around-the-World Postgraduate Clinic and Lecture Tour. Departure from San Francisco, October 10; return to New York, December 3, 1958.

International College of Surgeons, southeastern regional meeting, Miami Beach, January 4-7, 1959. For information, write to Harold O. Hallstrand, M.D., 7210 Red Road, South Miami, Fla., chairman.

CANCER DETECTION EXAMINATION LIMITED

Following the recommendation of the Cancer Committee of the Minnesota State Medical Association, no new patients will be admitted to the Cancer Detection Center at the University of Minnesota. Letters have been sent to more than 4,000 persons now on the waiting list, informing them of this and asking that they consult their own private physicians for this type of examination.

MINNESOTA ACADEMY OF GENERAL PRACTICE

The Minnesota Academy of General Practice announces the 8th Annual Fall Refresher which will be held Tuesday and Wednesday, October 21 and 22, 1958 at Mayo Civic Auditorium, Rochester, Minnesota.

A full panel of Mayo Clinic personnel will be on hand to deliver ten hours of intensive instruction from 2:00 p.m. through 5:00 p.m. on Tuesday and from 9:00 a.m. through 5:00 p.m. on Wednesday.

Further information may be obtained from James A. Blake, M.D., Executive Secretary, Hopkins, Minnesota.

CONTINUATION COURSES

September 23 to 25, the University of Minnesota will present a continuation course in Pediatrics for Pediatricians at the Center for Continuation Study on the University campus. This course for pediatricians and physicians interested in the field of pediatrics consists of lectures, panels, and round table discussions on "Advances in the Diagnosis and Management of Diseases of Infants and Children."

Visiting participants will include Drs. Daniel C. Darrow, Professor of Pediatrics, University of Kansas School of Medicine, Kansas City; James N. Etteldorf, Professor of Pediatrics, University of Tennessee College of Medicine, Memphis; and Waldo E. Nelson, Professor and Head, Department of Pediatrics, Temple University School of Medicine, Philadelphia. Dr. Darrow will also

(Continued on Page A-46)

They all went to the doctor . . .

I was too much

I was too little

I was simply two

And I was getting brittle

With my anemia, I could never make it up that high



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CONTINUATION COURSES

(Continued from Page A-44)

present the Fourth Irvine McQuarrie Lecture at 8:15 p.m., Wednesday, September 24, on "Clinical Observations and Experimental Studies of Body Water." The course will be presented under the direction of Dr. John A. Anderson, Professor and Head, Department of Pediatrics. The remainder of the faculty will include members of the faculty of the University of Minnesota Medical School and the Mayo Foundation.

Other medical continuation courses to be presented at the Center for Continuation Study, University of Minnesota, include:

October 6-8—Obstetrics for Specialists
October 23-25—Dermatology for General Physicians
November 3-8—Pediatric Radiology for Radiologists
November 17-19—Fractures for General Physicians
November 17-22—Neurology and Neurosurgery for General Physicians
November 20-22—Physical Medicine for Specialists

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

POSTGRADUATE COURSES ON DISEASES OF THE CHEST

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the following Postgraduate Courses this fall:

Clinical Cardiopulmonary Physiology—Edgewater Beach Hotel, Chicago, Illinois, October 13-17, 1958.

Diseases of the Chest—Park-Sheraton Hotel, New York City, November 10-14, 1958.

Tuition for each course is $100. Further information may be obtained by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

According to the Public Health Service, the United States is lowering its guard against diphtheria with the resultant increase in reported cases. The Service urges immunization of all children and in some areas, booster shots for adults.—Christmas Seal *Health News*.

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*Sea food—source of highly potent allergens. Typical are: lobster; tuna; sturgeon roe; fish oil used to prepare leather, chamois, soaps; cuttlefish bone for polishing material and tooth powder; glues made from fish products.

Woman's Auxiliary

FALL WORKSHOP WILL HAVE VACATION AIR

October 9 and 10 will hold much interest for Auxiliary members, when the Fall Workshop will be held at the Biltmore in Minneapolis.

Special note should be made of the fact that this year the workshop will cover portions of a two-day period. Also of special note is the meeting-place—the Biltmore, which offers the advantage of parking space, over-night quarters for those who desire, and eating facilities, plus our meeting place in a private dining room.

A worthwhile program is being planned by the president, Mrs. Reuben Erickson.

Circle these dates NOW!

EDITOR'S NOTE: News items regarding the activities of your county society are essential to well-rounded coverage of all Minnesota State Medical Association Auxiliary activities. Forward news items, newspaper clippings, and other items to Mrs. John Linner, 4619 Drexel, Minneapolis 24, or to the Auxiliary News Editor, Minnesota State Medical Association, 496 Lowry Medical Arts Building, St. Paul 2, Minnesota.

HENNEPIN COUNTY AUXILIARY TEA DATE IS SET

The Woman's Auxiliary to the Hennepin County Medical Society will hold its opening tea on Friday, October 3, from 2 to 4 p.m., at the home of Mrs. Howard Frykman, 6212 South Knoll Drive, Minneapolis. New members and officers will be honored and members of the Student American Medical Association will be guests.

Every journey to a forbidden end begins with the first step; and the danger of such a step by the federal government in the direction of taking over the powers of the states is that the end of the journey may find the states so despoiled of their powers, or—what may amount to the same thing—so relieved of the responsibilities which possession of the powers necessarily enjoins, as to reduce them to little more than geographical subdivisions of the national domain.—JUSTICE GEORGE SUTHERLAND.



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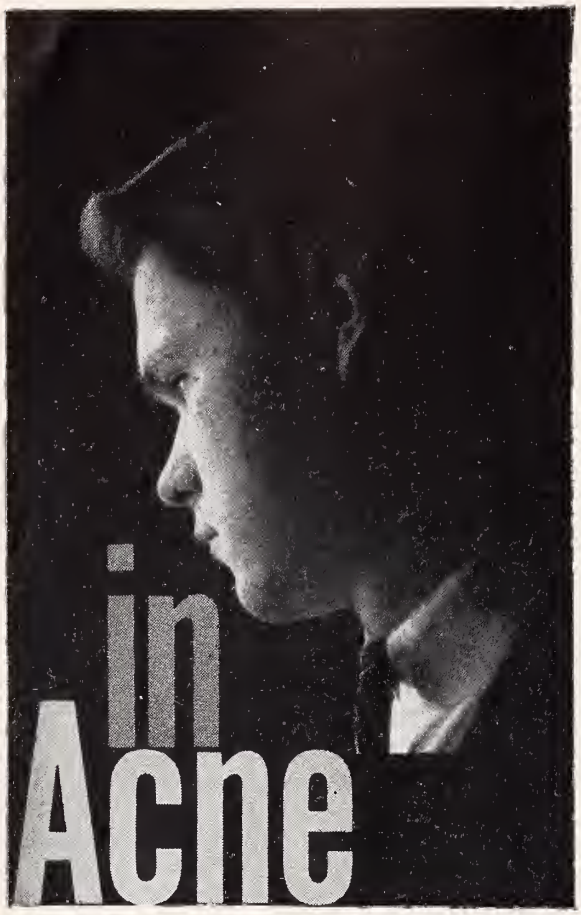
1. Thomas, J. W.: Ann. Allergy 16:128, 1958

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A-47



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1. Hodges, F. T.: *GP* 14:86, Nov., 1956.

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In Memoriam

IRVING JEFFERY GLASSBERG

Dr. Irving J. Glassberg, clinical instructor at the University of Minnesota Medical School, died July 28, 1958. He was fifty-one years old. His specialty was urology.

A native of Minneapolis, he returned to the city two years ago after practicing for more than twenty years in New Orleans, Louisiana. He attended the University of Pennsylvania and received his M.D. degree from the University of Minnesota in 1935.

In Louisiana, he was assistant clinical professor at the University of Louisiana Medical School and served as head of the urology department at the Touro Infirmary in New Orleans.

Dr. Glassberg was a member of Hennepin County Medical Society, Minnesota State Medical Association and the American Medical Association. He was a member of the Board of Temple Israel. Other memberships held by Dr. Glassberg include the American College of Surgeons, American Board of Urology and the American Urological Association. His fraternities were Zeta Beta Tau and Phi Delta Epsilon.

He is survived by his wife, Raleigh; two sons, John

(Continued on Page A-50)

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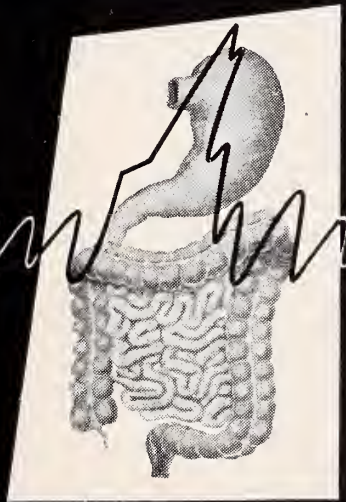
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dosage: one tablet before each meal and at bedtime.

SEARLE

IRVING JEFFERY GLASSBERG

(Continued from Page A-48)

and Jeffery, and a daughter, Raleigh, Minneapolis; his mother, Annette Glassberg, Bronxville, New York; and a sister, Mrs. Lester Isaac, also of Bronxville.

RICHARD B. GIRVIN

Dr. Richard B. Girvin, formerly of Minneapolis, died August 7, 1958, in St. Louis, Missouri. He was seventy-four years of age.

Dr. Girvin, who was born in Mankato, was a graduate of Hamline University, St. Paul, and University of Minnesota Medical School. He practiced medicine in Minneapolis for over thirty years and was on the staffs of St. Barnabas and St. Andrew's Hospitals.

He was a member of the American Medical Association, a life member of the Minnesota State Medical Association, Hennepin County Medical Society, Minnesota Medical Society of Military Surgeons and Aero Medical Association.

In World War I, Dr. Girvin was a captain in the Army Medical Corps and served in France and at Walter Reed Hospital, Washington, D. C.

Surving are a son, Richard W., St. Louis; a daughter, Mrs. Lloyd Hackley, Cleveland, Ohio; and two grandchildren.

ANNAH HURD

Dr. Annah Hurd, a practicing physician in Minneapolis for more than fifty years, died Thursday, July 24, 1958. She was eighty-six years old. Her retirement was announced in 1956.

Dr. Hurd graduated from the University of Minnesota's School of Pharmacy in 1896 and the School of Medicine in 1900. She later did graduate work at Northwestern University.

She was a member of the Hennepin County Medical Society and a life member of the Minnesota State Medical Association.

NURSE SHORTAGE

The Department of Labor estimates that this country's shortage of nurses has reached 70,000. The number available was estimated at about 430,000.

Simultaneously, the American Nurses' Association issued a statement expressing deep concern over the rapid expansion of hospitals in the face of the critical shortage of nurses and other health personnel.

The Labor Department's estimate is included in a twenty-seven-page pamphlet, "Nurses and Other Hospital Personnel," giving suggestions to communities on how to increase the nurse supply. Among these were recruitment programs, salary rises, encouragement of former nurses to return to work and encouragement of older women to become practical nurses.—*New York Times.*





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l-Lysine HCl	300 mg.
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Thiamine HCl (B_1)	10 mg.
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Communications

SILO-FILLER'S DISEASE INVESTIGATIONS

To the Editor:

The co-operation of physicians is being sought by the University of Minnesota in its study of silo-filler's disease.†

The School of Public Health and the Departments of Pathology, Radiology and Medicine of the Medical School, with the assistance of a grant from the National Institutes of Health, are engaged in a comprehensive study of human poisoning by silage gas. In addition to studies on pathogenesis and the biochemical aspects of the ensiling process, an important phase of the study involves epidemiologic inquiries on a random sample of farmers potentially exposed to silage gas and among suspect cases brought to our attention from a number of sources including practicing physicians.

The objective of this phase of the study encompasses the determination of prevalence of this disease entity which undoubtedly manifests itself in a spectrum of clinical illness ranging from early death due to massive pulmonary edema, through delayed death from bronchiolitis fibrosa obliterans, survival with chronic pulmonary insufficiency due to fibrosis and/or emphysema, to a simple chronic bronchitis or even complete recovery without sequelae. Furthermore, the role of silage gas (NO_2) poisoning in the production of chronic pulmonary disease is being sought and more-or-less quantitative correlations between clinical disease and degree of exposure to such gas are being explored.

This Section is for you to voice your convictions, comments, and queries on all subjects political, economic, historic, humorous, scientific or otherwise, to many physicians. Writings not sufficiently formal and too brief for an editorial or a scientific manuscript are requested. Clinical and research observations, no matter how brief, similar to those in *The Lancet* (London), are particularly encouraged.

Since the true incidence of such poisoning and the prevalence of sequelae is not known, a tremendous contribution to research in these several aspects of this study can be made by practicing physicians of the state.

Your co-operation is thus being urgently requested in notifying us of any probable or suspect case of exposure to silage gas or illness even remotely associated with filling of silos or with entry into silos for the two-week period after filling or refilling.

Upon receipt of such reports, a member of our investigating team will contact each reporting physician for clinical information and permission to interview the case relative to the circumstances of exposure.

LEONARD M. SCHUMAN, M.D.
Professor of Epidemiology and Director of Silo-Filler's Disease Studies

1158 Mayo Building
University of Minnesota
Minneapolis 14, Minnesota

†University of Minnesota Medical Bulletin 27, 234, May 1, 1956, and the J.A.M.A., 162:153, Sept. 15, 1956.

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General Interest

Dr. John R. McDonald, head of a section of surgical pathology in the Mayo Clinic, and professor of pathology in the Mayo Foundation, Graduate School, University of Minnesota, left Rochester on July 1 to become director of pathology at the Harper Hospital in Detroit, Michigan. Dr. McDonald has been a member of the staff of the Mayo Clinic since 1937.

* * *

Dr. A. G. Athens, Duluth, recently attended the International Congress of Ophthalmology in Brussels, Belgium.

* * *

Dr. William E. Eisenstadt, Minneapolis, recently spoke before the Blue Earth Valley Medical Society at Fairmont on the subject, "The Management of Bronchial Asthma, including Status Asthmaticus."

* * *

Dr. Charles G. Moertel has been appointed a consultant in medicine in the Mayo Clinic, Rochester.

* * *

Dr. Leland R. Christenson opened offices for general practice in Maple Plain, Monday, July 14. Dr. Christenson is a native Minnesotan from Marshall. He took his pre-medical training at St. Olaf College in Northfield, receiving his B.A. degree in 1953. He attended medical school at the University of Minnesota, from which he received his B.S. and M.D. degrees in 1957. Dr. Christenson was the second recipient of the Minnesota Rural Medical Student Scholarship. This scholarship is given by the Minnesota State Medical Association to one student each who intends to enter general practice in a town of less than 5,000 population in Minnesota. Dr. Christenson took his internship at Bethesda Hospital, St. Paul.

* * *

Drs. F. G. Elias and **H. E. Bakkila,** Duluth, attended the American Medical Association meeting in San Francisco on June 23-27.

* * *

Dr. Asa Graham, formerly of St. Paul, has joined the medical staff of the Faribault Medical Center, 924 N.E. First, and has begun the general practice of medicine and survery.

* * *

Dr. James H. Kelly, a native of De Graff, has opened offices at 204 Granite Exchange Building, St. Cloud, for the practice of internal medicine.

* * *

Dr. Ben Owens, Hibbing, won the Pfizer award at the Physicians' Golf Tournament in Virginia recently.

* * *

Dr. Harvey E. Sisk, St. Cloud physician, has been elected to the board of directors of the Minnesota Heart Association.

* * *

Dr. W. O. B. Nelson began the practice of medicine in Sanborn recently. Dr. Nelson is a graduate of Hamline University and the University of Minnesota's School of Medicine. He practiced internal medicine at Fergus Falls for twenty years, and the past year has been in general practice at Bisbee, Arizona.

* * *

Dr. Ralph E. Smith, Minneapolis, has been appointed a consultant in medicine in the Mayo Clinic, Rochester. Since 1954, Dr. Smith had been assistant professor of medicine in the University of Minnesota Medical School.

* * *

Effective August 1, **Dr. D. Robert Nelimark** became associated with **Dr. J. A. Callan** and **Dr. W. S. Neff** in the department of internal medicine at the Lenont-Peterson Clinic in Virginia.

* * *

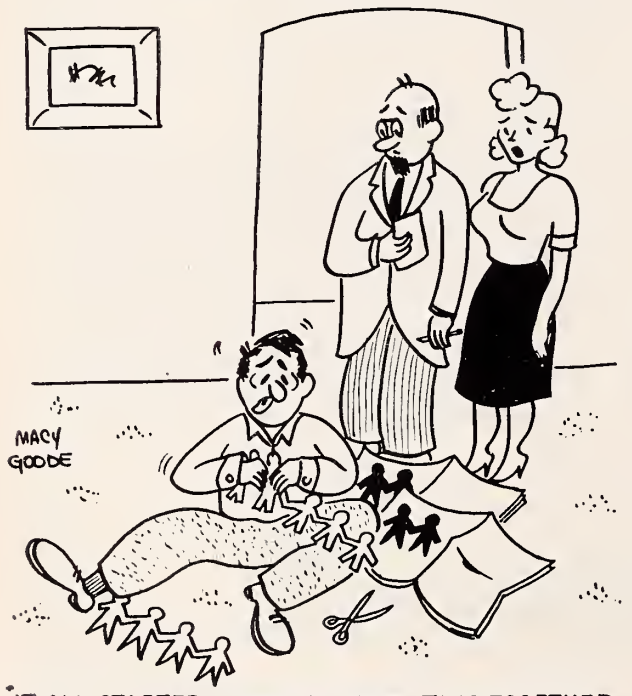
Dr. Henry Korda, Pelican Rapids, was recently appointed to the Board of the Fergus Falls Mental Health Clinic, according to Roland F. Winterfeldt, Executive Secretary of the Otter Tail County Welfare Board.

* * *

Dr. Robert K. Sommer, a graduate of Indiana University, has joined the staff of the Elk River Clinic.

* * *

Dr. Cleon R. Holland has been appointed to the staff of the Mayo Clinic in Rochester. He will be a consulting physician in the emergency and admitting room of St. Mary's Hospital in Rochester. Dr. Holland had been a fellow in surgery of the Mayo Foundation since January 1, 1954.



"IT ALL STARTED WHEN HE WAS PUTTING TOGETHER ONE OF THOSE 'ANY CHILD CAN ASSEMBLE IT' TOYS!"

Dr. Russell O. Sather, Crookston, has been elected to the board of directors of the Minnesota Heart Association for 1958-59. He was among the new members named at the Association's annual meeting in St. Paul. Research grants of $200,010 were distributed to fifty-five Minnesota heart scientists at the meeting.

* * *

Dr. Milton Abrahamson, with offices at 502 Medical Arts Bldg., and Westwood Medical Center, 2301 Louisiana Ave., St. Louis Park, announces the association of **Dr. Robert K. Nolan** in the practice of obstetrics, gynecology and infertility.

* * *

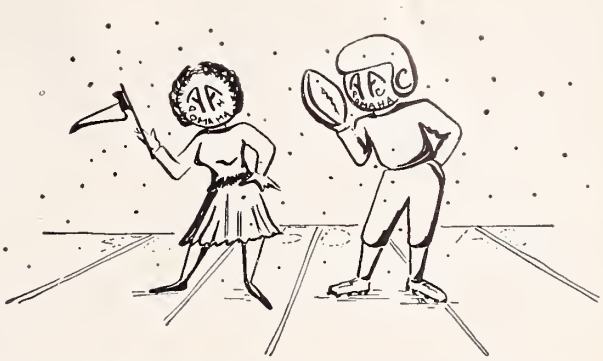
Dr. W. G. Tomhave, Hibbing, has taken a leave of absence from the Mesaba Clinic to take a residency at the Veterans Administration Research Hospital in Chicago.

* * *

Five Wayzata physicians will locate in the new Wayzata Medical Building, currently under construction. They are **Drs. Robert Semsch, Deane A. Petersen, E. J. Huenekins, F. J. McCaffrey** and **George O. Hilgermann.** The new structure is located on Highway 101, just north of Highway 12.

* * *

Dr. Harry A. Wilmer, a consultant in psychiatry in the Mayo Clinic since July 1, 1957, has resigned from the staff of that institution as of July 1, 1958, and is now in Palo Alto, California, where he will carry on the private practice of psychiatry.



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(*Name of university and results of clinical tests sent upon written request.)

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	Per Qt.
Vitamin A (U.S.P. units)	3000
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Niacinamide	8 mg.
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Thiamin (vitamin B_1)	.8 mg.
Pyridoxine (vitamin B_6)	.4 mg.



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Dr. J. A. Winter, Duluth, attended the regional meeting of the American College of Surgeons at Stockholm, Sweden, on July 2-7.

* * *

Dr. Roger R. Miesfeld, formerly of Columbus, Ohio, has recently joined with **Dr. R. T. Seashore** and **Dr. K. W. Teich**, of Duluth, in the practice of obstetrics and gynecology. Dr. Miesfeld, a native of Wisconsin, is a medical school graduate of George Washington University of Washington, D. C., and has just completed a four-year residency at Ohio State University in Obstetrics and Gynecology, receiving his master's degree in June.

* * *

Dr. and Mrs. Virgil J. Schwartz, Minneapolis, left on August 16 for an extended European tour, in the course of which Dr. Schwartz attended the eighteenth annual meeting of the International Academy of Ophthalmology in Brussels on September 8. They will visit Spain, France, Denmark, Switzerland, England and Scotland, as well as Belgium and Austria, before returning to Minneapolis.

* * *

Dr. Adelaide M. Johnson, Rochester, clinical professor of psychiatry in the University of Minnesota Medical School, recently spoke on "Special Features of Child Psychiatry" on the program of the Institute on Psychiatry and Religion. These annual institutes are devoted to a study of problems common to psychiatry and the clergy. This year's institute was held at the College of St. Catherine in St. Paul.

* * *

Eleven Minnesota scientists have been named recipients of national heart research grants-in-aid totaling $82,249.20 from the American Heart Association and its affiliates. The new awards will boost Heart Fund-sponsored research spending to a record $348,759.20 in Minnesota during the current fiscal year, according to Dr. Karl W. Anderson, president of the Minnesota Heart Association. The awards were among 226 totaling $1,540,457, announced by the AHA. Scientists working in thirty-six states and one foreign country (Lebanon) are sharing the grants, two-thirds of which are in the field of basic research. With the new awards, the total channeled into heart research by Heart Fund agencies now tops $31.5 million in the past ten years. Named in Minnesota were **Dr. W. O. Lundberg, Dr. Richard A. DeWall, Dr. Robert A. Good, Dr. Ralph T. Holman, Dr. Ancel Keys, Dr. Laurence O. Pilgeram, Dr. Edward Ronwin, Dr. Ernst Simonson, Dr. Henry L. Taylor, Dr. Louis Tobian**, and **Dr. Richard W. Von Korff.**

* * *

Dr. Leland G. Reichelt, Roseau, has associated with the Davis Clinic in Wadena. He replaces **Dr. John N. Heinz** who has been called into the army medical corps.

* * *

The following officers were elected at a recent meeting of the Ada Hospital staff: **Dr. Theo. Loken**, Ada, president or chief of staff; **Dr. Byron Kinkade**, Ada, vice president; **Dr. Clifford Stadum**, Twin Valley, secretary. Dr. Loken appointed **Dr. E. Erickson**, Halstad,

as chief of medical records committee to be assisted by Dr. Kinkade. Appointed by Dr. Loken as chief of tissues committee is Dr. Stadum, to be assisted by Dr. Loken. Drs. Kinkade, Stadum and Erickson will be members of the Executive, Joint Conference and Credentials Committee headed by the chief of staff.

* * *

Dr. Arthur J. Rushay recently joined **Drs. A. E. Muller** and **Charles J. Beck** in their medical practice in North Saint Paul.

* * *

Dr. Roy H. Good began practicing medicine in Northfield on September 1. He has been practicing at Glenwood for the past five years.

* * *

Dr. John S. Lundy, of the Mayo Clinic, Rochester, has been appointed a consultant-lecturer in anesthesiology to the Surgeon General of the U. S. Navy, it has been announced by Rear Admiral E. C. Kenney, of Washington, D. C., assistant chief for personnel and professional operations of the Bureau of Medicine and Surgery of the Navy. Dr. Lundy founded the Section of Anesthesiology at the Mayo Clinic in 1924. He carried on a training program for members of the armed forces at the Mayo Clinic during World War II, and has written a book on clinical anesthesiology and made many other contributions to literature in this field.

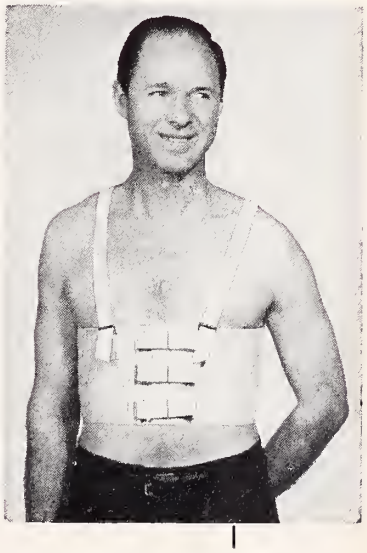
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MINNEAPOLIS WOMAN SENTENCED IN ABORTION CASE

On August 6, 1958, Elvira Bernice Nelson appeared before the Hon. Levi M. Hall, Judge of the District Court of Hennepin County, and entered a plea of guilty to an information which charged her with the crime of abortion. Judge Hall then sentenced Mrs. Nelson to be imprisoned in the State Reformatory for Women at Shakopee for a term not to exceed one year. Immediately thereafter, Judge Hall stayed the execution of the sentence and placed the defendant on probation for one year. Mrs. Nelson, a widow, who was born at Winger, Minnesota, on September 15, 1917, resided at 2629 36th Avenue South, Minneapolis, at the time of her arrest.

The case came to the attention of the authorities when the defendant became ill following a criminal abortion and was hospitalized at Minneapolis General Hospital. Mrs. Nelson did not co-operate with the authorities in naming the abortionist until after a representative of the Minnesota State Board of Medical Examiners had signed a complaint charging her with a crime as stated above. She later gave a full statement which disclosed that she had been aborted by a Minneapolis man on June 14, 1958, after being informed that the fee for the operation would be $500. The Hennepin County Attorney's office then issued an abortion complaint against the man named by Mrs. Nelson, and he was awaiting trial when the defendant Nelson was sentenced.

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BOOKS RECEIVED

A DOCTOR SPEAKS HIS MIND. Roger I. Lee, M.D. Formerly on Board of Trustees of American Medical Association; formerly president of the American College of Physicians, professor of hygiene at Harvard, member of Harvard Corporation and a founder of the Harvard School of Public Health. 120 pages. Price $3.00, cloth. Boston: Little, Brown & Co., 1958.

ELECTROCARDIOGRAPHY. Michael Bernreiter, M.D., F.A.C.P. Assistant Clinical Professor of Medicine, University of Kansas Medical School; Chief of Electrocardiography, St. Mary's Hospital, Kansas City, Missouri; Fellow of the American College of Cardiology and Fellow of the American College of Chest Physicians. 134 pages. Illus. Price $5.00, cloth. Philadelphia: J. B. Lippincott Company, 1958.

THERAPEUTIC USES OF ADHESIVE TAPE. 130 pages. Illus. Cloth bound. New Brunswick, N. J.: Johnson & Johnson, Second Edition, 1958.

CLINICAL OBSTETRICS AND GYNECOLOGY. Vol. 1, No. 2 of quarterly series. Toxemias of Pregnancy, Edited by Louis M. Hellman, M.D., and Fibromyomas of the Uterus, Edited by Robert A. Kimbrough, M.D. Illus. Price, $18.00 per year, cloth bound. New York: Paul B. Hoeber, Inc., 1958.

IDEALS IN MEDICINE. A Christian Approach to Medical Practice. Edited by Vincent Edmunds, M.D., M.R.C.P., and C. Gordon Scorer, M.B.E., M.D., F.R.C.S. 192 pages. Price $3.00, cloth. Chicago: The Christian Medical Society, 1958.

PATHOLOGY FOR THE PHYSICIAN—William Boyd, Professor Emeritus of Pathology, University of Toronto; Visiting Professor of Pathology, University of Alabama; formerly Professor of Pathology, University of Manitoba and the University of British Columbia. Sixth Edition. 489 illustrations and 12 plates in color. Cloth, $17.50. Philadelphia: Lea & Febiger, 1958.

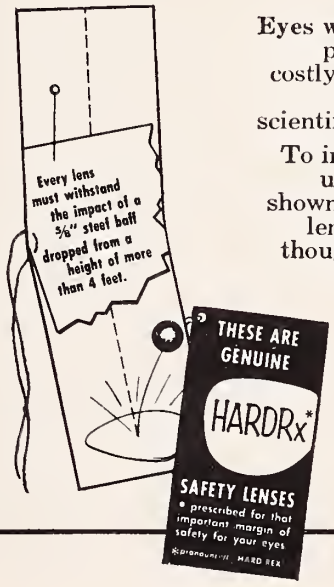
This book is written in Dr. Boyd's usual interesting and almost story-like manner. Throughout its pages he attempts to correlate clinical and pathologic data. Thus, it is not as complete as a standard text in medicine or as complete as a standard text in pathology. The chapters are arranged to cover the individual organs and their most prominent diseases. The busy practitioner will find this volume useful for a review of the high points of the pathology and the correlation of the clinical manifestations of many major diseases.

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The booklet emphasizes the importance of early rehabilitation and of close co-operation between the physician and members of the family in helping stroke patients regain many of their abilities. It gives specific suggestions for self-help devices that can be used at home and also lists a number of sources through which additional help may be sought during the rehabilitation process. Also included are recommendations for the families of patients requiring treatment over a long period of time and a discussion of the special problems of the patient with aphasia.

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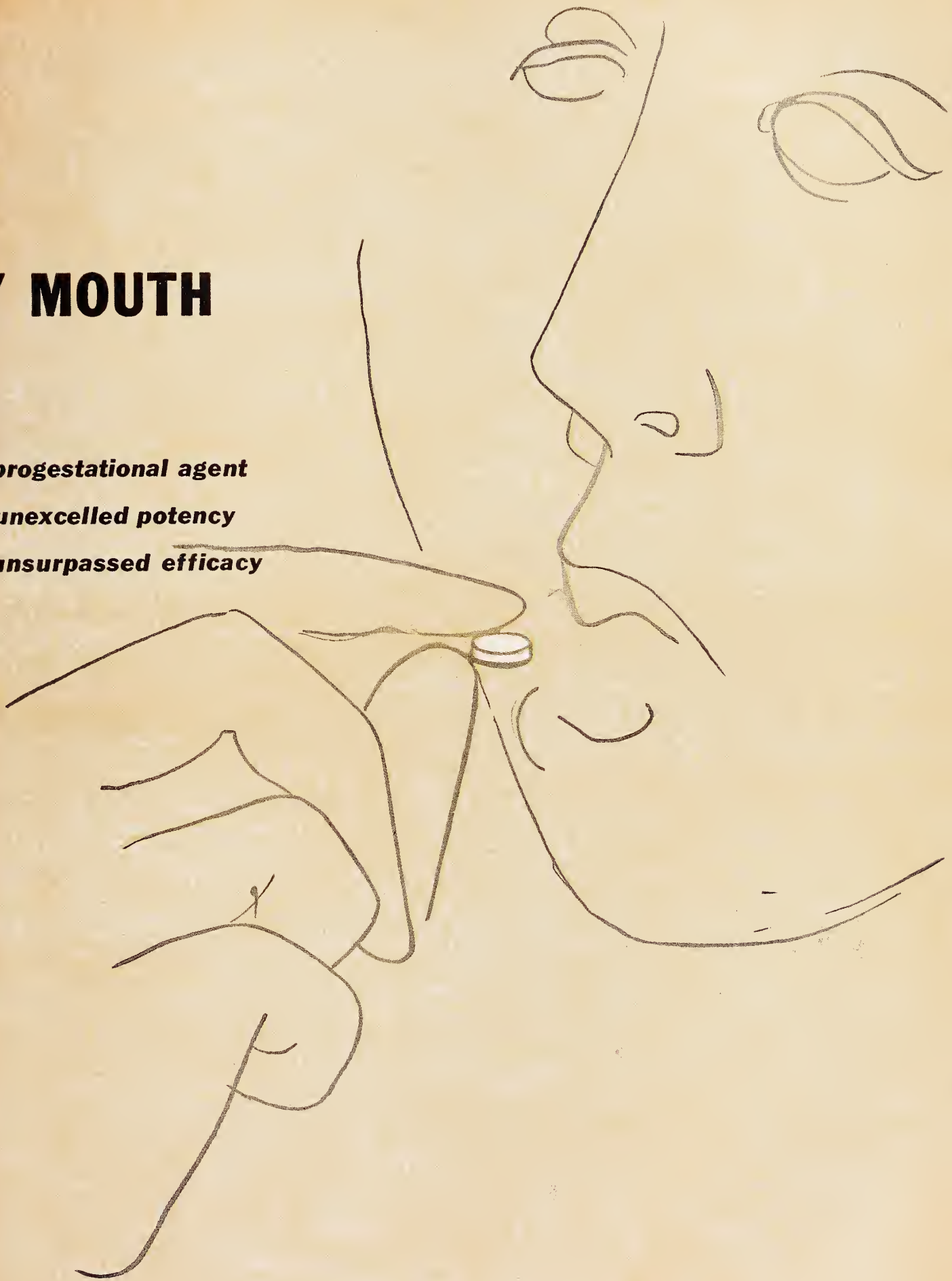
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Abdominal Aortic Aneurysms

Considerations in Diagnosis and Management

EUGENE F. BERNSTEIN, M.D.
ALAN P. THAL, M.D.
RICHARD L. VARCO, M.D.
Minneapolis, Minnesota

THE development of effective methods of surgical treatment of abdominal aortic aneurysms during the past six years has transformed a disease which virtually had been an incurable medicopathologic curiosity into a surgical lesion of increasing importance. Treatment of these lesions by resection and graft has progressed from a period of experimental trial at a few university medical centers to one of widespread acceptance on many active surgical services.

Additional importance must be attached to this condition because of its absolute increase in incidence over the past few decades. Maniglia and Gregory[1] have shown that in recent years the number of thoracic aortic aneurysms has diminished considerably, while aneurysms of the abdominal aorta have become more frequent. In like manner, the ratio of arteriosclerotic to syphilitic aneurysms has increased from 1:8 (1906-1931) to 1:0.4 (1949-1951). Recent studies by Estes[2] and others[3,4,5,6] have confirmed the almost uniformly arteriosclerotic origin of abdominal aortic aneurysms being seen currently.

This change in etiology and incidence must be attributed to (1) the marked decrease in the incidence of late stages of syphilis and (2) the increase in the aged population, and coincident increase in arteriosclerosis and its complications. It would appear that a continued increase in the incidence of this disease must be expected in the future.

Historical Review of Surgical Treatment

The origin of the surgical attack on arterial aneurysms is centuries old. As early as 400 A.D., a surgeon named Antyllus[7] operated on aneurysms of the head and extremities, using a method known as "aneurismotomy." Between two ligatures, he opened and evacuated these aneurysms, but did not actually excise them. Other early surgical attacks on peripheral aneurysms include the "methode of Purmann,"[8] in which the extirpation of peripheral aneurysms was described in 1680, and Anel's[9] principle of placing a ligature proximal to the dilatation in 1710.

Further refinements of the Anel method were added by John Hunter in 1785. He attempted to tie the artery some distance proximal to the aneurysm, where the vessel was more likely to be healthy. Thus, he ligated the femoral artery for popliteal aneurysms in "Hunter's canal." Unfortunately, this procedure, and its later modification by Scarpa (1819) in which the artery was ligated in "Scarpa's triangle," often led to gangrene and loss of the extremity.

The first recorded clinical description of an abdominal aortic aneursym is that of Vesalius in 1567.[10] In 1719, Valisneri[10] described a traumatic abdominal aortic aneurysm, and the first attempt at its surgical treatment: an "unskillful surgeon" lanced the tumor. Brasdor, in 1798, ligated the main trunk of the aorta *distal* to an aneurysm, close to the lesion. However, the patient did not survive.

The first recorded ligation of the aorta *proximal* to an aneurysm was the heroic procedure of Sir Astley Cooper in 1817,[11] in which he used this method to treat a ruptured aneurysm of the left ileofemoral region. Unfortunately, the patient succumbed forty hours postoperatively (Fig. 1).

Other principles of aneurysm control were proposed in the nineteenth century. Pasquin suggested the double ligature, both above and below the sac. However, in some of his cases the collateral circulation to the sac continued to feed the aneurysm. Wardrop, in 1825, advocated ligating *one* branch distal to aneurysms of the common carotid, subclavian and innominate arteries. Still later, in

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1857, Syme described a method of incising the sac without controlling ligatures around the vessel, plugging the entrance to the aneurysm with a finger. Occasional successful results were reported in the treatment of peripheral aneurysms by all of these methods, but it was not until the latter half of the nineteenth century that success in treating abdominal aortic aneurysms was first described.

Osler[10] reports a case treated by Murray in 1863 in which compression above the sac was used to successfully treat an aneurysm of the abdominal aorta in one patient for six years. Unfortunately, the method of compression is not described.

A landmark in aneurysm treatment was reached in 1864, when Moore[12] first introduced wire into an aneurysm to induce thrombus formation. He passed 78 feet of wire into an aneurysm of the ascending aorta; the patient lived for five days before succumbing to generalized sepsis. A valuable addition to this form of treatment was made by Corradi and Buressi, in 1879, when they passed an electric current through the wire in an aneurysm to further encourage thrombus formation.

Another important contribution to aneurysm treatment was described in 1888, when Matas[8] reported treating a traumatic aneurysm of the brachial artery by obliteration of the dead space by suture, after removing the thrombus, while preserving the aneurysm wall and its collaterals. This principle of "endoaneurysmorraphy" was later refined into obliterative, restorative and reconstructive types, with variations in technique designed to preserve the main arterial channel in saccular and fusiform lesions. However, it was not used for an aneurysm of the abdominal aorta until Lozano's unsuccessful case in 1906, and not successfully until Bigger's case[13] in 1938.

With the turn of the century, interest in vascular conditions increased in many surgical clinics and a number of interesting items were reported in the surgical literature. Perhaps the most important, and certainly the most forward-looking, was Carrel's series of experiments[14] in vascular surgery and the use of arterial and venous autografts and homografts which began in 1901.

Sporadic reports of attacks on aortic aneurysms also became somewhat more common. In 1890 Milton unsuccessfully ligated the abdominal aorta proximal to an aneurysm of the abdominal aorta, for the first time. In 1899, Keen ligated the aorta above the renals for a large abdominal aortic aneurysm with survival of the patient for forty-eight days. Tuffier[15] reported the ligation of the sac of a saccular aneurysm of the ascending aorta, with the death of the patient in thirteen days, due to hemorrhage secondary to infection and gangrene of the sac—the forerunner of present-day discussion concerning the necessity for the removal of the aneurysm sac whenever possible.

Halsted became interested in the problem, and in 1905 published a report[16] on the treatment of two patients with a gradually occluding aluminum band applied to the aorta proximal to the aneurysm. In 1912, Finney and Halsted[17] reported twenty-three cases (eighteen of their own) which had been treated by wiring, and, in some cases, the injection of gelatin. The wire was passed through a hollow needle, which was introduced into the aneurysm percutaneously. Two of their cases survived for over one year.

Other successful cases treated by ligation of the aorta were reported. The first successful ligation of the aorta *distal* to an abdominal aortic aneurysm was reported by Vaughn in 1920,[18] the patient surviving over sixteen months. In 1923, Matas[19] reported the seventeen-month survival of a twenty-three-year-old Negress treated by ligation of the aorta *proximal* to an abdominal aneurysm.

Blakemore[20] revived interest in wiring with coagulation in 1938, a cause he was to champion for fifteen years. In the same year, Bigger[13] reported his case, previously alluded to, in which he first ligated the aorta proximal to an aneurysm with fascia lata, and then performed an aneurysmorraphy a month later, with a two-year survival. The following year Elkin[21] reported the successful treatment of a case with partial occlusion of the aorta with cotton tape.

A new type of treatment was heralded by Page's use of cellophane to produce hypertension by wrapping the kidneys in 1939. DeTakats,[22] who treated three cases with ligation of the aorta proximal to the aneurysm with a 1 in. wide cellophane band, used a sheet of cellophane to wrap the aneurysm in one case which was threatening to perforate. Other materials used to wrap aneurysms, in an effort to prevent rupture, include Lowenberg's use of cutis[23] in two cases in 1950 and Wylie's introduction of fascia lata as a wrap in 1951.[24]

The development of practical methods for the preservation and use of human aortic homografts by Gross in 1948[25,26] was a large step towards the present methods of treatment of aortic aneurysms.

Three years later, Dubost reported the first case of excision and graft of an abdominal aortic aneurysm,[27] with re-establishment of continuity by an aortic homograft. This patient lived for at least three years following surgery.[28]

In 1953, Bahnson[29] described the successful treatment of saccular aneurysms of the thoracic and abdominal aorta by excision of the aneurysms with suture of the aortic wall. However, in the same year, the superiority of the Dubost method, and its uniform applicability to fusiform and saccular aneurysms, was indicated by the first American report of successful resection and graft of abdominal aortic aneurysms, by DeBakey and Cooley.[30] Interestingly enough, only one of their first seven cases died of uremia, and two of the cases were failures of polythene wrapping.

The initial success of the homograft as a replacement material was quickly followed by a series of technical difficulties in the supply, sterilization, preservation and, most important, late degeneration of this biologically variable material. For these reasons, a number of synthetic prostheses have been introduced and are currently being evaluated as aortic replacement materials.

With increasing experience there has been a general acceptance of resection and graft as the treatment of choice for abdominal aortic aneurysms, and with this acceptance, a gradual decrease in surgical mortality has been accompanied by consequent improvement in over-all survival.

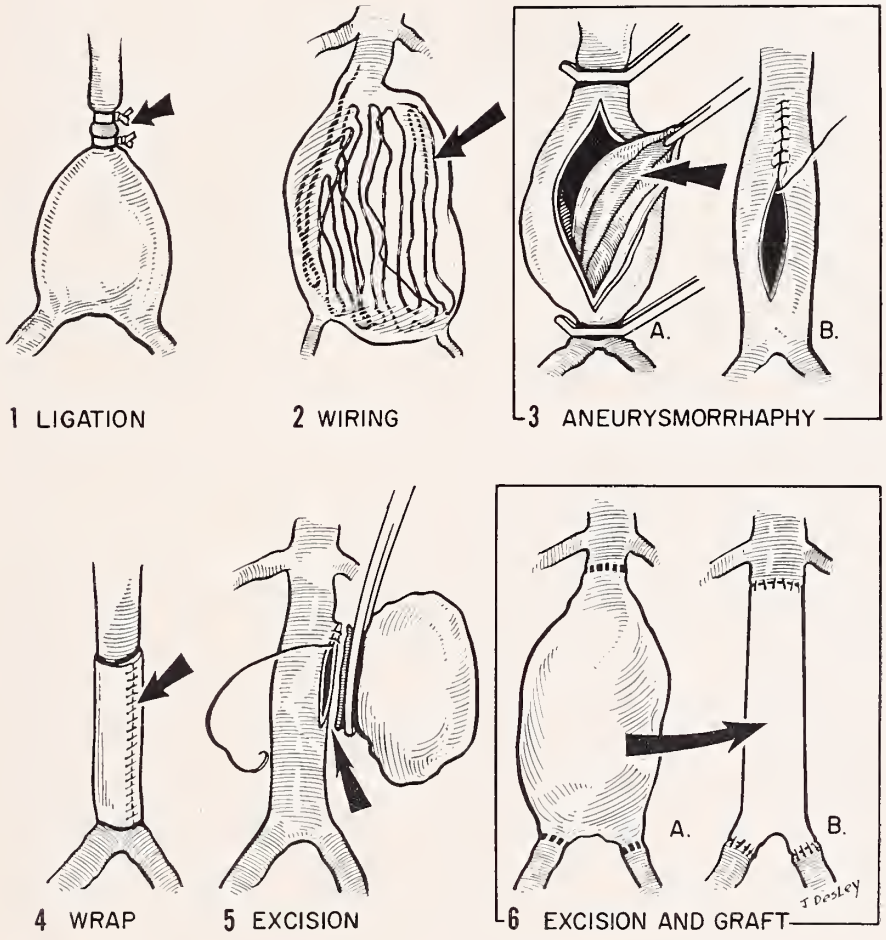


Fig. 1. Historical development of methods of treatment of aneurysms of the abdominal aorta.

Diagnosis

A great majority of these lesions can be diagnosed on the basis of history and physical examination alone. Approximately three-fourths of the patients will be males, and five-sixths will be over sixty years old. Of ninety-one cases seen at the University of Minnesota Hospitals from 1948 to 1957, sixty-nine were men and seventy-nine were over sixty years old (Table I).

Over half of the patients complained of some

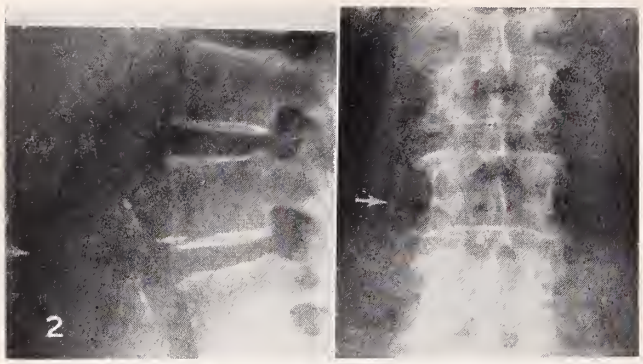


Fig. 2. Flat plate and lateral films of the abdomen demonstrating calcification in the wall of an aneurysm. Both walls can be seen in the lateral view.

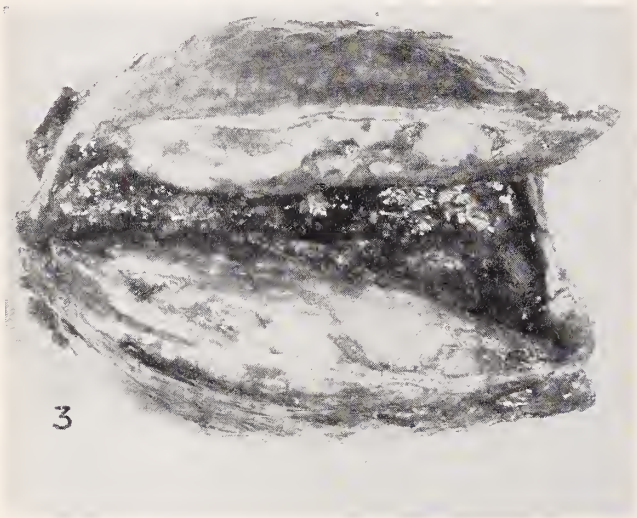


Fig. 3. Specimen of an aortic aneurysm demonstrating the thick walls and relatively normal aortic channel.

type of vague abdominal pain—usually epigastric and not very severe. Severe pain, or a sudden increase in pain, in a patient with a palpable, pulsatile abdominal mass indicates rupture or imminent rupture of the aneurysm. In luetic aneurysms, severe pain is often indicative of vertebral erosion. However, vertebral erosion is rarely seen in arteriosclerotic aneurysms. None of our cases had evidence of lues, although serological tests for syphilis were not performed in all cases.

A palpable, expansile, pulsatile, abdominal mass, usually in the epigastrium and frequently to the left of the midline, is present in 80 per cent of the cases. However, ectasia of the aorta may simulate aneurysm. Indeed, five cases have been explored at this hospital in the past nine months in which a preoperative diagnosis of abdominal aneurysm based on physical findings was in error.

Further, twenty of the cases seen during the past ten years were entirely asymptomatic, and discovered during the course of medical care or hospital admission for unrelated conditions or at postmortem. Nine of these cases were discovered at laparotomy performed with the intention of treating other conditions. It is, therefore, apparent that physical findings are not diagnostic in all cases and that other aids may occasionally be necessary and helpful.

TABLE I. ABDOMINAL AORTIC ANEURYSMS

1948-1957
(91 Cases)

Age	Male	Female
40-49	3	0
50-59	8	1
60-69	31	8
70-79	18	9
80-89	8	4
90-99	1	0
Total	69	22

Associated Diseases		
Hypertension (over 140/90)	(56%)	51
Myocardial infarction		16
Cerebrovascular accidents		5
EKG with BBB		2
Ulcer		6
Cancer		8
Symptoms		
Sudden onset of abdominal pain, ruptured aneurysm		8
Abdominal pain, with palpable pulsatile abdominal mass		51
No pain; patient felt a pulsatile mass		13
No symptoms—Discovered at postmortem		6
Discovered at physical examination		4
Discovered on x-ray		1
Discovered at laporotomy		9
Radiology		
Aortographic demonstration		27
Calcification on plain film		25
Neither		39

Where the diagnosis is questionable, considerable aid can be obtained from various roentgenological techniques. Many cases, particularly those of long-standing, reveal calcification of the abdominal aorta on supine and lateral films of the abdomen (Fig. 2). In our series, twenty-five of the ninety-one cases demonstrated calcification in this manner. In addition, other studies which can be undertaken in an effort to diagnose an abdominal mass, such as a gastrointestinal series, barium enema, or intravenous urogram, may reveal the presence of a posterior abdominal mass, suggestive of aneurysm.

As previously mentioned, vertebral erosion is only rarely seen at present. Older reports[29] indicate that 75 per cent of syphilitic aortic aneurysms developed vertebral erosion, with preservation of the intervertebral discs. Bahnson[29] believes that arteriosclerotic aneurysms usually develop following eccentric dilation, elongation and thinning of the entire circumference of the vessel. Elongation pushes the aorta forward and away from the vertebral bodies and nerve roots, and in the absence of localized rupture, or saccular aneurysm, there is no vertebral erosion or root pain.

Aortography is unnecessary, except for the occasional cases in which the diagnosis is in doubt. Moreover, the occasional complication of transgenologist is careful to look for both sides of the aorta when calcification is present on the flat plate or lateral. In difficult cases, aortography may be

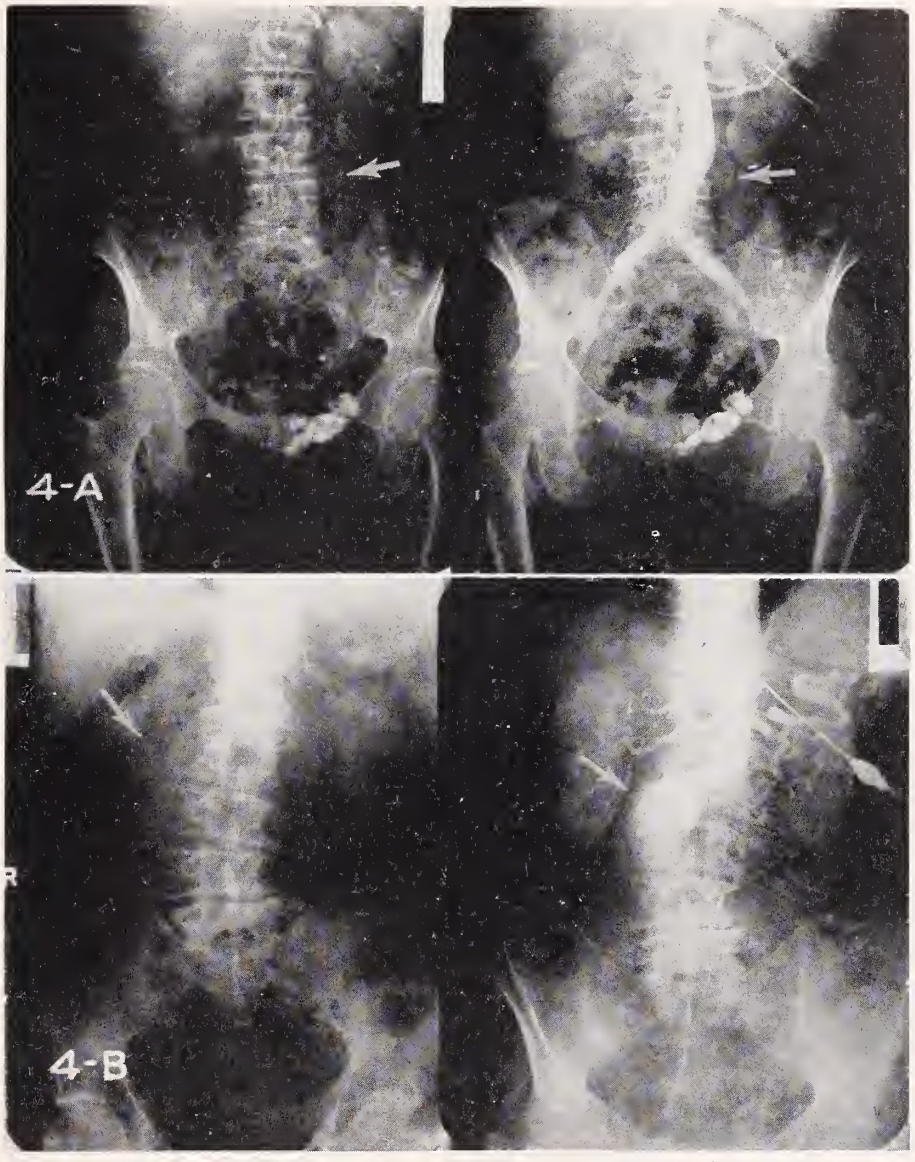


Fig. 4. (a) Flat plate demonstrates calcification, but the aortogram shows only ectasia. Most of the aneurysm is filled with thrombus. (b) Most commonly the aortogram clearly shows the aneurysm, if there is calcification in the wall, but it is unnecessary in making the diagnosis.

lumbar aortography[31,32] makes it an unwise procedure unless the diagnosis cannot be made by other means. In addition, aortography may be misleading in aneurysms since the great bulk of the aneurysm contains laminated clot and frequently there is a normal-sized aortic channel running through the aneurysmal area (Fig. 3). For this reason, a normal aortogram does not rule out the presence of an aortic aneurysm (Fig. 4).

False diagnoses of aneurysm of the abdominal aorta can be ruled out in some cases if the roentgenologist is careful to look for both sides of the aorta when calcification is present on the flat plate or lateral. In difficult cases, aortography may be helpful in differentiating between the ectatic and aneurysmal aorta.

Ruptured aneurysms usually present with sudden, severe abdominal pain which is frequently accompanied by shock and the development of an abdominal mass of increasing size. Fortunately, rupture is most common posteriorly into the retroperitoneal space, and more frequently to the left than to the right. Free rupture into the peritoneal cavity is a relatively rare condition which is almost always quickly fatal. In one case of free

rupture of an aneurysm into the peritoneal cavity which occurred while the patient was being prepared for elective surgery at this hospital, almost immediate laporotomy failed to prevent the patient's death. In the more common retroperitoneal perforations, however, there is a period of hours to a few days in which surgical therapy may be successfully instituted in most cases.

Occasional cases of rupture into the gastrointestinal tract have been described in the literature, most commonly into the duodenum.[33] However, none of our cases has had this complication.

Large arteriosclerotic aneurysms of the abdominal aorta occasionally do extend cephalad to involve the renal, superior mesenteric and coeliac arteries. However, of the cases in this series that were operated upon or seen at postmortem, none was found to involve these major visceral branches.

Management

1. *Selection of Cases for Surgery.*—Some authors feel that surgery should be denied certain patients with abdominal aortic aneurysms for various reasons. Bahnson[34] indicates that he operates on all patients who are not older than sixty-five and are in relatively good condition. In older patients with symptoms he recommends (but does not urge) surgery. Other authors feel that the presence of congestive heart failure, recent myocardial infarction, severe renal disease, or other lethal disease, constitutes a contraindication to surgery. DeBakey,[35] on the basis of his wide experience, feels that surgery should not be denied any patient with an aortic aneurysm solely on the basis of age. In his series, the mortality rate for patients over seventy-five years old was 17.5 per cent. Whereas this is greater than the elective mortality rate for younger patients in his hands, he feels that the lethality of the disease makes it acceptable. DeBakey considers the average case of aortic aneurysm a surgical emergency of greater priority than malignancy.

2. *Preoperative Preparation.*—In addition to the normal preoperative studies, a careful evaluation of the renal status of the patient should be obtained. In addition, the patient should have a standard antibiotic bowel preparation prior to surgery.

3. *Operative Technique.*—The details of the operative approach, dissection and reconstruction have been well described in other publications, and need not be discussed here. Only a few pertinent points will therefore be considered.

The use of Arfonad to lower the blood pressure prior to cross-clamping the aorta does not appear to be of value despite the optimistic reports of Julian[36] and Powers.[37] Indeed, the three operative deaths in elective cases in our series in 1957 were all patients in whom Arfonad had been administered. In two of these cases, Arfonad must be implicated as at least a major contributor to the lethal end-result.

Sacrifice of the inferior mesenteric artery may be performed regularly.

Extra-corporeal circulation may be used in difficult cases, particularly those involving the renal arteries and/or coeliac axis.[38]

Technically, the most difficult part of the procedure is usually involved in the dissection of the aneurysmal sac from the inferior vena cava. Some authors, such as Julian,[46] feel that with fixation of the sac to the inferior vena cava, it is sometimes wiser to permit that portion of the sac to remain in the abdomen, than to risk laceration of the wall of the vena cava. Most writers agree, however, that the risk of subsequent infection demands the removal of the sac, even at the risk of tearing the cava.

Heparin in doses of 30 to 40 mgs. is injected into the distal aortic tree just prior to cross-clamping. No heparin is given postoperatively, however, and no other postoperative anticoagulants are considered advisable.

A complete discussion of replacement prostheses currently available will not be undertaken here. Recent studies such as those of Szilagyi,[39] Barnes,[40] and others, have indicated that the incidence of early and late rupture and degeneration of homografts make them relatively undesirable replacement materials. Recent work seems to indicate the relative advantages of Teflon[41,42,43] and Dacron over other synthetic materials. DeBakey's experience in which he has used knitted, crimped Dacron as a vascular substitute in 350 cases over the past year indicates that it is certainly a satisfactory substitute. Some evidence has recently appeared in literature concerning the thrombogenic qualities of Ivalon as compared with other synthetics, and this has been confirmed in the present series by two deaths secondary to thrombosis in Ivalon grafts. At this clinic, Teflon is the prosthetic currently in use for all aortic replacements.

4. *Postoperative Care.*—Aside from normal

postoperative procedures, only the careful observation of the patient's renal status and frequent observation of the presence of peripheral pulses must be added.

Results of Treatment by Resection and Graft

Of the various collected series of untreated cases of abdominal aortic aneurysms which have been published recently, the studies of Estes[2] appear to be the most authoritative and most easily understood (Table II). In this series of 102 cases, 33 per cent of the patients were dead within one year of the time of the diagnosis and only 18.9 per cent were alive at the end of five years. The cause of death is known in forty-nine of the sixty-four patients who died, and in 63.3 per cent of these the cause of death was rupture of the aneurysm. In other series, the incidence of death due to rupture of the aneurysm averages approximately 40 per cent. The one-year survival is often quoted as less than that given by Estes, varying from 17 to 39.7 per cent in three other recent series. These statistics of the normal course of the disease, as well as the normal death rate for patients in this age group, as given by Estes, must be taken into consideration in evaluating the results of surgical treatment.

TABLE II.

UNTREATED ABDOMINAL AORTIC ANEURYSMS

Author	Estes[2]	Wright[5]	Others[3, 4, 6, 45, 46]
Number cases	102	107	337
Per cent ruptured	63%	13%	41%
Hypertension	40%	50%	46%
1-year survival	67%	39%	18%
2-year survival	58%	29%	
5-year survival	19%	4%	

TABLE III. ABDOMINAL AORTIC ANEURYSMS RESECTION AND GRAFT

Authors	Hospital	Year	No. Cases	Non-Ruptured Mortality	Ruptured Mortality	Over-All Mortality
DeBakey, Cooley, Creech[35]	Baylor	1957	230	8%	33%	11%
Barnes, Ellis, Kirklin[40]	Mayo	1958	78	14.8%	25%	15.4%
Bahnson[34]	Hopkins	1956	57	12%	86%	21.1%
Roberts, Danielson, Blakemore[47]	Univ. Pennsylvania	1957	30	18%	75%	36%
Wheelock, Shaw[48]	Massachusetts General	1956	19	0	60%	15.8%
Szilagyi[49]	Henry Ford	1955	15	20%	None	20%
Bosher, Decker[50]	Med. Coll. Virginia	1957	13	22%	50%	32.5%
Hardin[51]	Kansas	1957	18	20%	75%	27.7%
Bernstein et al	Univ. Minnesota	1958	46	13.2%	75%	24.0%

As indicated in Table III, the operative mortality for elective resection and graft of abdominal aortic aneurysms varies from 8 to 22 per cent, generally decreasing as the experience of a particular surgeon or institution increases. The mortality for cases of ruptured aneurysm is much higher, of course, but it must be remembered that these cases would *all* die within a short time without surgery.

It is still too early for a comparison of Estes' non-treated series with a sizable, statistically significant, long-term follow-up of treated cases. However, the survival figures reported by DeBakey and his group indicate a gratifying increase in life expectancy in the treated patients. Based on fifty-one cases, they obtained a two-year survival rate of 72 per cent (Estes—58 per cent) and, based on sixteen cases, a three-year survival rate of 69 per cent (Estes—49 per cent). Although this series is still small, these results are certainly encouraging.

Of the fifty-seven cases of abdominal aortic aneurysm seen at this hospital during the past two years, all have been considered for resection, with the exception of those three discovered at postmortem. It is felt that this group can be contrasted with the thirty-four cases seen in the previous eight years, in which sixteen were not operated on, two were explored alone, thirteen underwent aneurysmorraphy or wrapping or some combination of both, and three patients (1955) were subjected to resection and graft, with eventual fatal results in all three (Table IV).

Of the cases seen in the past two years, nine were not operated on, three were discovered at postmortem, and the other six either refused surgery or were considered inoperable for cardiac, renal or other contraindications. Three additional patients were found to have abdominal aortic aneurysms on exploration and had no surgical treatment for this condition. One of these was found to have inoperable metastatic cancer, another had a bleeding duodenal ulcer which was treated by subtotal gastrectomy and in the third patient the distal vessels were too poor to suture. All three of these patients have subsequently died.

Three patients were treated by aneurysmorraphy, with one death. In this patient a femoral by-pass and sympathectomy had been performed, following which both legs became pulseless. Im-

TABLE IV. ABDOMINAL AORTIC ANEURYSMS

1948-1955	Total	Known Dead	Known Alive	Average Survival Time (Mos.) Alive/Dead
Not operated on	16	15	1*	48+/20
Explored only	2	2	0	0/0.5
Aneurysmorrhaphy or wrap	13	9	4	52+/24
Resection—Elective	2	2	0	0/8
Ruptured	1	1	0	0/0
Totals	34	29	5	
1956-1957				
Not operated on	9	9†	0	0/3.2
Explored only	3	3	0	0/5
Aneurysmorrhaphy	3	1	2	7+/0
Resection—Elective	36	7	29	11+/7
Ruptured	6	4	2	14+/0
Totals	57	24	33	

*Operated on elsewhere in 1955.
†1 patient operated on in 1958.

mediate laporotomy revealed an aortic aneurysm with thrombosis. Despite the removal of the thrombus, retrograde flushing of both popliteals, and aneurysmorraphy, the patient died the following day, having re-thrombosed his abdominal aorta. The other two patients are doing well, fourteen and four months post-operatively.

The remaining thirty-six patients having non-ruptured aneurysms were treated by resection and graft, and will be combined with the two cases treated in this manner in 1955 to present our total experience with this method of treatment.

There were five operative deaths for an immediate mortality of 13.2 per cent. All five deaths occurred in patients over seventy years of age. In two of these cases, thrombosis of Ivalon prostheses was noted, and in one, frank rupture of the middle of a homograft resulted in death, although an attempt to replace this graft with a new one was undertaken. In the other two cases, as previously mentioned, Arfonad must be implicated as an important factor in the mortality.

Of the thirty-eight cases, eighteen were replaced by homografts, nine by Ivalon grafts, three by Ivalon plus nylon grafts, six by Edwards-Tapp nylon, one by Teflon, and one by a combination of Edwards-Tapp nylon and homograft.

TABLE V. ABDOMINAL AORTIC ANEURYSMS
1955-1957
Elective Resection and Graft

	1955	1956	1957	Totals
Number of cases	2	17	19	38
Operative deaths	1	1	3	5 (13.2%)
Late deaths	1	2	1	4
Alive over 1 year	1*	15†	2	18§
Alive less than 1 year	0	0	13	13

Mortality Record

No.	Age	Year	Cause of Death
Operative			
1	71	1955	Thrombosis of Ivalon graft, 6 wks. p.o.
2	77	1956	Rupture of homograft, 20 days p.o.
3	73	1957	Arfonad thrombosis of Ivalon graft, 4 days p.o.
4	71	1957	Arfonad, day of surgery
5	84	1957	Arfonad, day of surgery
Late			
1	67	1955	Metastatic CA colon, 15 mos. p.o
2	86	1956	Mesenteric thrombosis, 20 mos. p.o.
3	64	1956	Unknown, 6 mos. p.o.
4	49	1957	Probable rupture of graft, 5 mos. p.o.

*Died 15 mos. postop.
†Died 20 mos. postop.
§Includes 2 late deaths.

In twenty-five cases only a straight graft was used. In eleven cases, a bifurcation replacement was necessary, and in three others the bifurcation was resected, but the common iliac arteries could be sewn together and only a straight replacement graft was necessary.

As Table V indicates, there have been four late deaths in this group, two of these patients surviving over one year following surgery. The remainder of the patients have all been contacted recently, are alive and without evidence of recurrence.

Of the eight cases of ruptured aneurysms which have been operated on, there have been only two survivors (Table VI). In this group (aside from the technical factors involved at surgery) the most common complication leading to death postoperatively was renal failure. The two survivors have lived thirteen and nine months respectively. However, one has subsequently been hospitalized for other complications of his widespread arteriosclerosis.

TABLE VI. RUPTURED ABDOMINAL AORTIC ANEURYSMS
1955-1957

No.	Age	Preoperative Status	Operation	Result	Cause of Death
1	62	Acute shock	Ivalon graft	Died 7 days po	Uremia
2	71	Rupture in UMH	Ivalon patch	Died 2 days po	Hemorrhage
3	57	Acute shock	Homograft	Died 7 days po	Uremia; myocardial infarct
4	71	Acute shock	Homograft	O.K. 13 months	
5	68	Ivalon wrap 8 months before; rupture in UMH	Resected, no graft	Died in operating room	Cardiac arrest
6	74	Shock 3 days	Homograft	Died day of surgery	Hemorrhage
7	63	Shock 1 day	Ivalon-nylon	O.K. 9 months	
8	69	Free peritoneal rupture	Homograft	Died day of surgery	Hemorrhage; myocardial infarct

Comparison of the two groups (1948-1955 and 1956-1957) indicates the extent of improvement in salvage from this disease (Table IV). Of the thirty-four patients in the earlier group, all have been followed, and twenty-nine are known to be dead. Of the more recent series of fifty-seven cases, all of whom have been followed, thirty-three are alive following surgery and twenty-four are known dead. Advanced age (over seventy), rupture, hypertension and associated cardiac and renal disease are the most common factors leading to the death of these patients.

It is apparent that there is still considerable room for improvement. However, it must be noted that rupture of the aneurysm was responsible for the death of only seven of the nineteen patients who died during the past two years, as contrasted with the generally accepted figure of 40 per cent of deaths by rupture given in the literature. Further, the generally severe arteriosclerotic process, as well as other serious diseases of the aged, make this group of patients subject to a high death rate from other unrelated causes. Further follow-up of these and additional cases over a longer period of time will be necessary before a complete and reliable evaluation of the increase in survival as a result of resectional surgery can be attempted.

Renal Factors in Surgical Failures

A review of the eleven cases in this series which did not survive the immediate postoperative period indicated that the incidence of renal disease in these patients was considerably higher than might be expected. In addition, the recent studies of Thurlbeck and Castleman,[44] implicating cholesterol emboli to the kidneys as a prime cause of death following cross-clamping of the aorta below the renal arteries, led us to become interested in studying the available renal pathological material from these cases.

Advanced nephrosclerosis with extensive glomerular hyalinization and intimal proliferation of the arcuate and smaller arteries was present in eight of these eleven autopsied patients. Milder changes were seen in the remainder. Two cases showed cholesterol embolization (Fig. 5). The common occurrence of chronic severe renal disease in these patients with pronounced aortic atherosclerosis accounts for the high incidence of transient or prolonged postoperative renal insufficiency. Indeed, of the four patients dying several days subsequent to surgery, three exhibited anuria or severe oliguria.

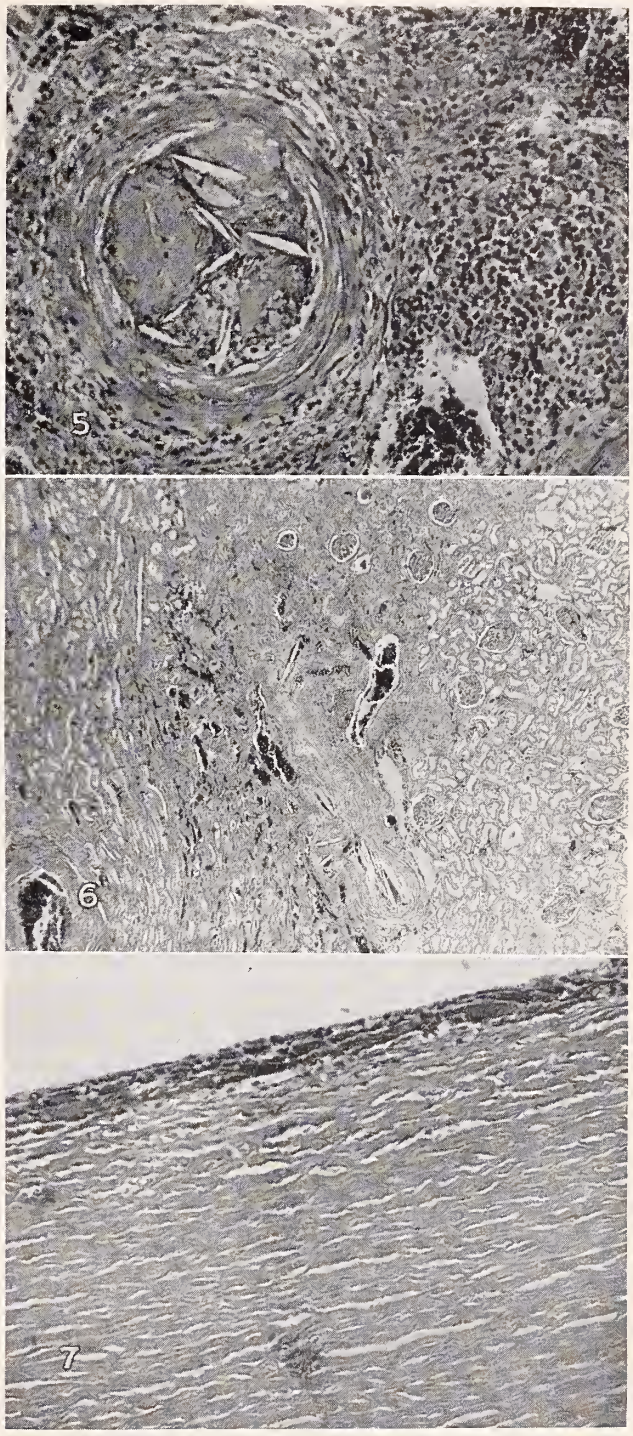


Fig. 5. Recent cholesterol embolus in small renal artery occurring on the day of surgery.
Fig. 6. Old cholesterol embolus in subcortical renal artery. Note wedge-shaped healed infarct of the cortex.
Fig. 7. Homograft from patient who died twenty months after surgery. The media is composed of condensed uninvaded elastic tissue. The neointima is thin and unstable.

Tissue Reactions to Vessel Prostheses

The ideal substitute for the resected aorta would be readily embodied in the host tissue.

This would involve interstitial infiltration by living host connective tissue and the development of a vascularized stable intima. A study of various substitutes recovered after several months from a few of our patients reveals that this ideal has yet to be attained. Sections from a homograft twenty months after operation show that the media persists as an unvascularized homogenous tube of condensed and sometimes fragmented elastic tissue (Fig. 7). This neointima is only a few cells thick, unstable and constantly undergoing superficial ulceration and thrombosis. The situation in the human atherosclerotic patient differs from that in the experimental animal for in the former instance the host intima is itself ulcerated and replaced by atheroma and this does not serve as a donor for endothelial invasion of the homograft to the extent seen in the animal. Similarly, the nylon and ivalon prostheses (Figs. 8 and 9) showed irregular host invasion with the formation of an unstable intima in many areas. The newer materials such as teflon and dacron were not available for this study.

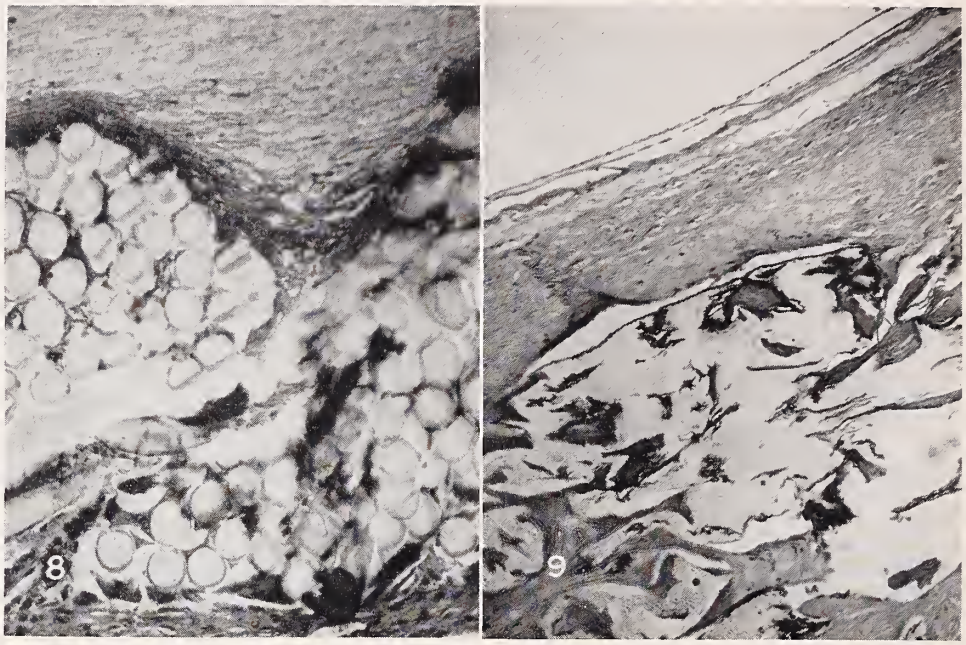


Fig. 8. Edwards-Tapp Nylon prosthesis removed three months after grafting. There is inadequate invasion by host connective tissue and thrombosis in the crimped area.

Fig. 9. Ivalon prosthesis at four months. Strands of connective tissue are seen invading between the interstices of the material. The new intimal layer is thickened but viable.

Summary

A discussion of the etiology, pathogenesis, diagnosis and management of aneurysms of the abdominal aorta has been undertaken. The experience at the University of Minnesota Hospitals has been compared with that of other institutions.

It appears that surgical treatment of aneurysms of the abdominal aorta by resection and graft in non-ruptured cases may be undertaken with an expected mortality of less than 15 per cent. This must be contrasted with the attrition rate of 33 per cent in the first year for patients with this disease who remain untreated.

Until further long-term studies are available, it would appear that resection and graft is the treatment of choice for aneurysms of the abdominal aorta in patients of all ages, unless serious cardiac or renal contra-indications exist.

Technical factors, previous renal disease, and the use of Arfonad have been implicated as the major causes of death following aortic surgery at this institution.

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Evaluation of Conventional Roentgenologic Methods in the Study of Congenital Heart Disease

• *In about 80 per cent of patients with congenital cardiac disease, an accurate determination of the type of malformation and an adequate prediction of the result of operation can be made by correlation of the clinical history, physical examination, electrocardiographic evidence and conventional x-ray studies of the chest. Drs. Vickers and Kincaid discuss the pertinent conventional roentgenologic findings.*

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OPEN CARDIOTOMY by means of extracorporeal circulation has made possible the surgical correction of virtually all the more common forms of congenital malformations of the heart and great vessels. This increase in the scope of operable heart disease demands greater specificity in the evaluation of the individual patient. This evaluation includes accurate determination of the type of malformation present and prediction of whether correction of the malformation will result in improvement or deterioration of the cardiac status. The information obtained from the clinical history, a careful physical examination, an electrocardiogram, a conventional roentgenogram of the thorax, and roentgenoscopic examination of the heart is sufficient to answer these questions in about 80 per cent of cases. Of the remaining cases, the necessary information may be obtained by cardiac catheterization in about 10 per cent and by cardiac catheterization and angiocardiography in the remaining 10 per cent.

It is the purpose of this paper to discuss some of the problems and capabilities of the roentgenologist in the interpretation of the findings by conventional roentgenologic methods in operable congenital diseases of the heart and great vessels.

Read at the meeting of the Minnesota Radiological Society, Saint Paul, Minnesota, March 1, 1958.

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General Roentgenologic Criteria

Few signs that are manifested roentgenologically are, as isolated findings, unequivocally diagnostic of a specific malformation of the heart or great vessels. The worth of the roentgenologic interpretation in the evaluation of these malformations, therefore, lies in noting certain pertinent features that may be evident roentgenologically. These features are the general cardiac configuration, the transverse diameter of the heart (as estimated by the cardiothoracic ratio), the appearance of the main pulmonary artery and its central and peripheral branches, the size and configuration of the aortic arch, the size of the left atrium, and notching of the inferior borders of the ribs.

Much has appeared in the literature in recent years describing subtle changes in the cardiac contour and transverse diameter of the heart as being indicative of specific ventricular enlargement. When one is reminded, however, that the size and contour of the heart vary considerably with posture, age and phase of the respiratory cycle at the time of exposure, and that in congenital heart disease one cannot even be certain that two ventricles are functionally and ana-

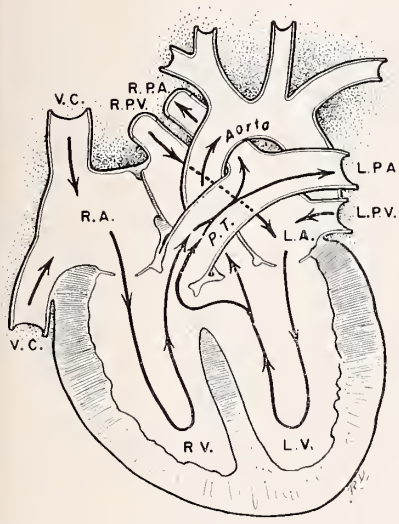


Fig. 1. Ventricular septal defect. If a pressure gradient is maintained between the ventricles, there is a left-to-right shunt through the defect from the high-pressure chamber (left ventricle) to the relatively low-pressure chamber (right ventricle). (Reproduced with permission from Edwards, J. E.: Congenital malformations of the heart and great vessels. *In* Gould, S. E.: Pathology of the Heart. Springfield, Illinois: Charles C Thomas, 1953, pp. 266-503.)

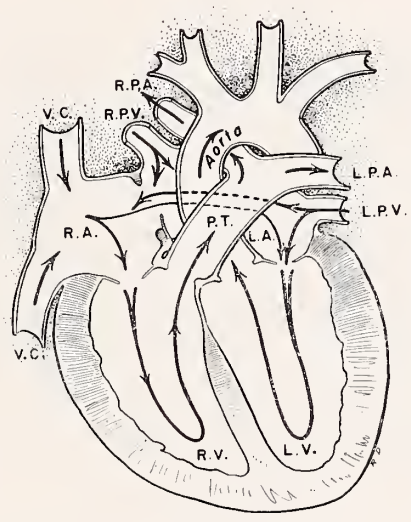


Fig. 2. Atrial septal defect. The left-to-right shunt through the defect is not dependent upon a pressure gradient but upon the differences in distensibility of the thick-walled left ventricle and the thinner-walled right ventricle. (Reproduced with permission from Edwards, J. E.: Congenital malformations of the heart and great vessels. *In* Gould, S. E.: Pathology of of the Heart. Springfield, Illinois: Charles C Thomas, 1953, pp. 266-503.)

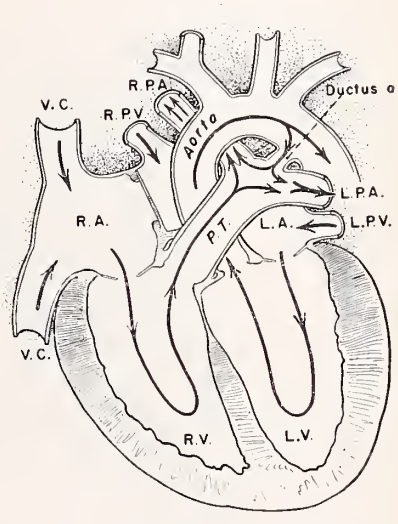


Fig. 3. Patent ductus arteriosus. The left-to-right flow through the persistent ductus arteriosus is a reflection of the pressure gradient between the aorta and the main pulmonary artery. (Reproduced with permission from Edwards, J. E.: Congenital malformations of the heart and great vessels. *In* Gould, S. E.: Pathology of the Heart. Springfield, Illinois: Charles C Thomas, 1953, pp. 266-503.)

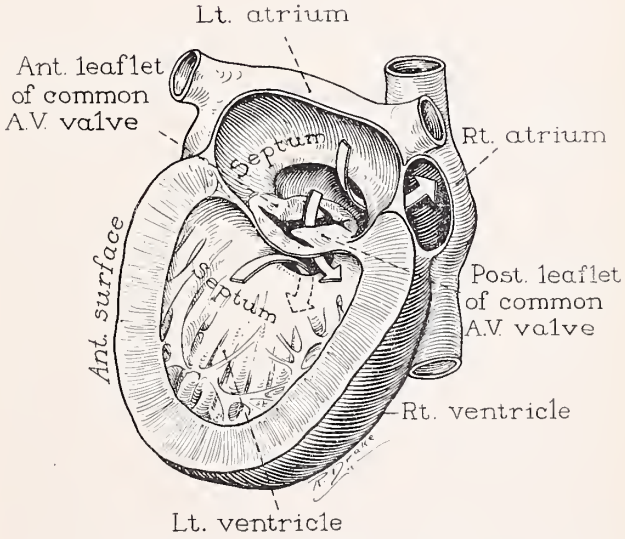


Fig. 4. Persistent common atrioventricular canal. All chambers of the heart are in communication. The magnitude of the left-to-right shunt is limited only by the magnitude of the pulmonary resistance. (Reproduced with permission from Rogers, H. M. and Edwards, J. E.: Incomplete division of the atrioventricular canal with patent interatrial foramen primum (persistent common atrioventricular ostium): Report of five cases and review of the literature. Am. Heart J., 36:28-54 [July] 1948.)

tomically present, it becomes evident that these criteria are of little value in the diagnosis of congenital heart disease.

artery. Patent ductus arteriosus produces a somewhat different picture in that the aortic arch is usually normal in size and may be bulbous in ap-

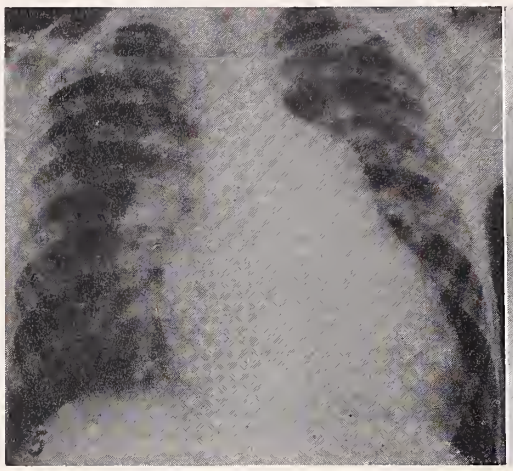


Fig. 5. Ventricular septal defect. There is a large flow in the pulmonary artery as manifested by large peripheral pulmonary arteries, hilar arteries, and main pulmonary artery. As a result of the diastolic overload of the left ventricle produced by this increased pulmonary flow, the left ventricle is enlarged. The left ventricular enlargement is manifested by an increase in the transverse diameter of the heart. The hilar arteries were found to pulsate vigorously. The size of the aortic arch cannot be evaluated.

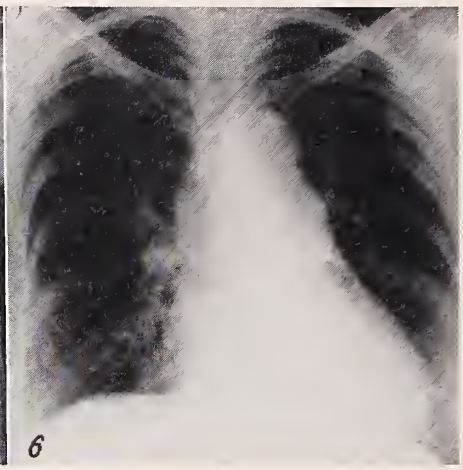


Fig. 6. Patent ductus arteriosus. There is little evidence of increased flow in the pulmonary artery but the hilar arteries and the main pulmonary arteries are slightly enlarged. The hilar arteries were found to pulsate normally. The aortic arch is bulbous.

Anomalies Characterized by Left-to-Right Shunt

A large group of cardiac anomalies may be considered together since the hemodynamic alterations are similar in that they are characterized by an arteriovenous or left-to-right shunt and therefore have similar roentgenologic features. This group includes ventricular septal defect (Fig. 1), atrial septal defect (Fig. 2), patent ductus arteriosus (Fig. 3), persistent common atrioventricular canal (Fig. 4) and anomalous pulmonary venous connection. The roentgen characteristic of these malformations is increase in the size of the main pulmonary artery and its central and peripheral branches as evidence of increased flow in the pulmonary artery. There are no distinctive differences roentgenologically between ventricular septal defect, atrial septal defect and persistent common atrioventricular canal. In addition to signs of increased flow in the pulmonary artery, these three conditions are commonly associated with a hypoplastic aortic arch and vigorously pulsating branches of the pulmonary

pearance, and since the abnormal flow of blood from the systemic to the lesser circulation occurs during both systole and diastole the branches of the pulmonary artery are less enlarged and pulsate more normally than in the intracardiac defects. In patent ductus arteriosus the left atrium is found to be enlarged in about 8 per cent of cases. Such enlargement is seldom if ever noted in the intracardiac defects. In about 50 per cent of cases the radiologist may be able to suggest a distinction between patent ductus arteriosus and the intracardiac defects on the basis of these differentiating features (Figs. 5 and 6).

Perhaps of even more value than a definitive roentgenologic diagnosis in the group with arteriovenous shunt is the information contributed by the roentgenologist in establishing the decision of operability in the individual patient. Operability in cases of ventricular septal defect and, less frequently, in patent ductus arteriosus and atrial septal defect depends to a very large extent upon the presence or absence of increased flow in

the pulmonary artery. Pulmonary arterial hypertension in ventricular septal defect, which is the most common congenital cardiac anomaly to produce pulmonary hypertension, may be due to

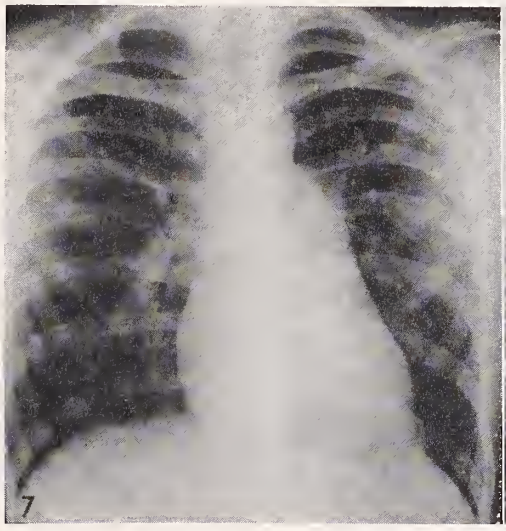


Fig. 7. Ventricular septal defect. The pressure in the pulmonary artery was equal to systemic pressure before and after surgical repair of the defect. There is increase in size of the hilar arteries and the main pulmonary artery with no increase in size of peripheral pulmonary arteries. This is suggestive of increased pulmonary vascular resistance. At operation the right ventricle was found to be tremendously enlarged, but the transverse diameter of the heart is not increased. The aortic arch is hypoplastic.

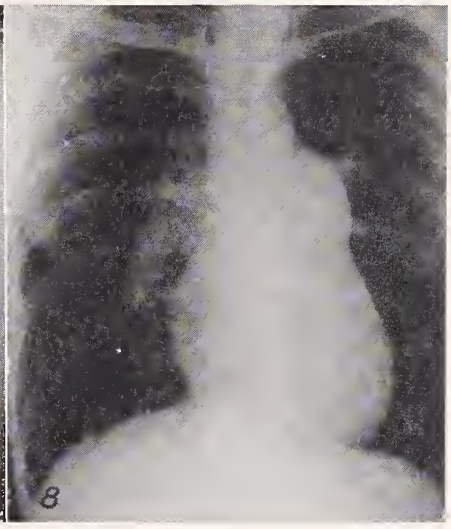


Fig. 8. Atrial septal defect. The pressure in the main pulmonary artery was equal to systemic pressure. The main pulmonary artery and hilar arteries are greatly enlarged and the peripheral arteries are normal. This appearance is consistent with pulmonary hypertension resulting from increased pulmonary vascular resistance. The aortic arch is small to normal. The heart is not enlarged in the transverse diameter.

increased peripheral pulmonary vascular resistance or just to increase in the volume and velocity of blood in the pulmonary circulation without increased peripheral pulmonary vascular resistance. In either situation, pressure in the pulmonary trunk may be equal to the systemic pressure. It is apparent, then, that increased pressure in the pulmonary trunk in association with greatly increased flow therein indicates that closure of the defect will result in a substantial decrease in the pulmonary arterial hypertension and the heart will be, anatomically and physiologically, virtually normal. If, however, pulmonary hypertension is found to be associated with no increase of flow in the pulmonary trunk, it may be assumed that the pulmonary hypertension is secondary to greatly increased pulmonary resistance which is, for all practical purposes, irreversible. Closure of the defect in this situation produces no beneficial result, but rather may be disastrous; pressure in the pulmonary trunk remains elevated and, with closure of the defect, the entire load is placed upon the right ventricle which may then fail.

It is seldom necessary to resort to cardiac catheterization to determine operability in ventricular septal defect. The presence or absence of increased flow in the pulmonary artery may be established in the majority of cases by clinical, electrocardiographic and roentgenologic methods. Roentgenologically, the observation of enlargement of the main pulmonary artery and its central and peripheral branches is indicative of a greatly increased flow in the pulmonary artery (Fig. 5). If the main pulmonary artery and the central branches are very large and the arteries in the peripheral pulmonary fields are of small or normal size, it is reasonable to assume that there is little increase of flow in the pulmonary artery and that pulmonary arterial hypertension is present as a result of increased pulmonary resistance (Figs. 7 and 8).

The size and configuration of the heart is also important in helping to determine operability. In

a series of 115 patients who had been operated upon for correction of ventricular septal defect, the appearance of the heart at the time of operation was noted by the surgeon. It was evident that in patients with increased flow in the pulmonary artery the left ventricle was enlarged. This occurs because of the diastolic overload of that chamber in this particular condition. The enlargement was manifested by encroachment of the heart on the left pulmonary field, and not infrequently the left border of the heart was against the left lateral wall of the thorax. The hypertrophied right ventricle did not contribute to this increase in the transverse diameter of the heart. In the few surgically treated patients in whom there was no increase of flow in the pulmonary artery the left ventricle was not enlarged, and although the right ventricle was greatly hypertrophied there was no increase in the transverse diameter of the heart. It may be assumed, then, that increase in the transverse diameter of the heart with projection to the left in patients with ventricular septal defect is an indication of left ventricular enlargement and is therefore another roentgen sign of increased flow in the pulmonary artery (Figs. 5 and 7). The unique hemodynamic alterations in ventricular septal defect that have produced this characteristic change in cardiac size and contour are not present in atrial septal defect, since it is not associated with a diastolic overload of the left ventricle unless a large right-to-left shunt exists. The situation also differs in patent ductus arteriosus in that the left ventricle is usually enlarged in the presence of either increased or decreased flow in the pulmonary artery, and the right ventricle enlarges only as a result of severe hypertension in the pulmonary artery. It must be assumed, then, that this sign relative to cardiac size and contour is of no importance in the evaluation of conditions other than ventricular septal defect.

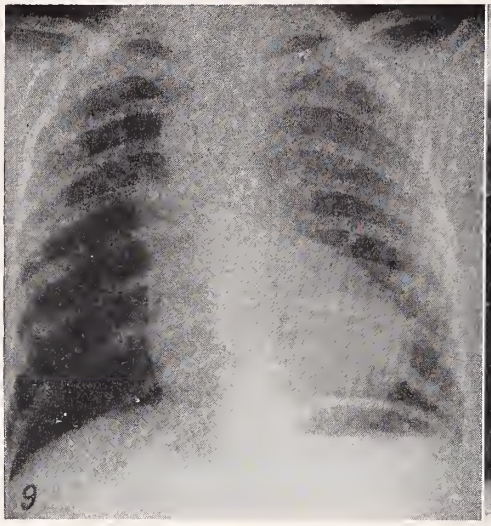


Fig. 9. Tetralogy of Fallot. Right-sided aortic arch. Coeur-en-sabot configuration. At operation a large flow through the bronchial arteries was observed. The random disorderly arrangement of the vascular markings, especially in the left lung, is due to the ectatic bronchial arteries.

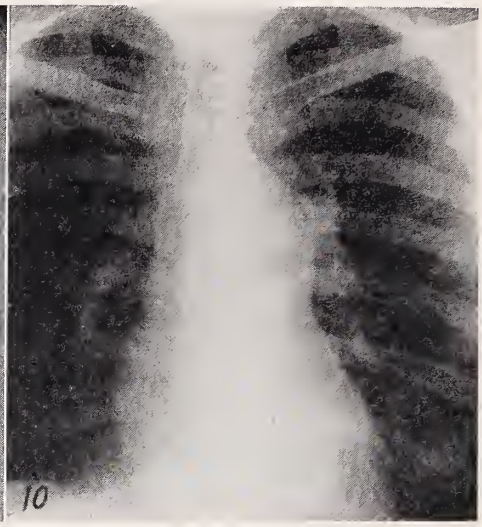


Fig. 10. Isolated pulmonary valvular and infundibular stenosis. There is post-stenotic dilatation of the main pulmonary artery, and the left pulmonary artery is larger than the right.

Anomalies Characterized by Pulmonary Stenosis

The other large group of cardiac anomalies that have gained importance since they are now surgically correctable are those that are characterized by varying degrees of pulmonary stenosis. The most common of these are pulmonary stenosis with ventricular septal defect or tetralogy of Fallot, and isolated pulmonary stenosis which may or may not be associated with atrial septal defect. Both of these conditions are said to be characterized by a decrease in pulmonary vascularity. This finding is actually noted, however,

in only about 15 per cent of patients with tetralogy and in about 50 per cent with isolated pulmonary stenosis. In the majority, pulmonary vascularity appears to be normal and in a small percentage it may be increased. In the latter group are those patients with so-called pink tetralogy who have only a mild pulmonary stenosis and a left-to-right shunt. Increased vascularity may also occur in the presence of a large collateral flow through the bronchial arteries or when there is an associated patent ductus arteriosus. A large collateral circulation through the bronchial arteries may produce a bizarre appearance of the peripheral pulmonary fields, in which the vascular structures are arranged in a random, disorderly fashion.

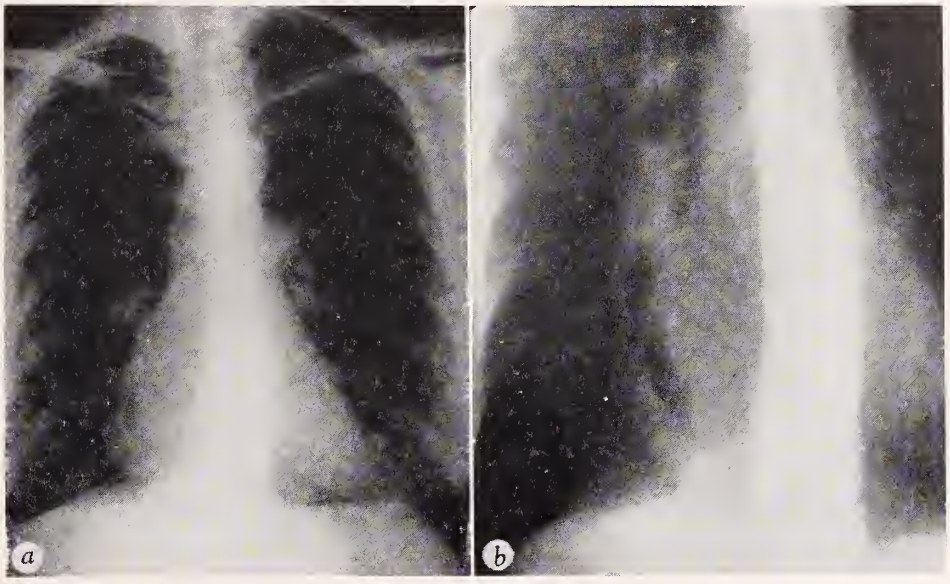


Fig. 11. Anomalous venous drainage of the right lung into the inferior vena cava. In the conventional roentgenogram *(a)* the anomalous vein may be seen along the right cardiac border. The tomogram *(b)* of this area demonstrates the anomalous vein and its major tributaries from all segments of the right lung.

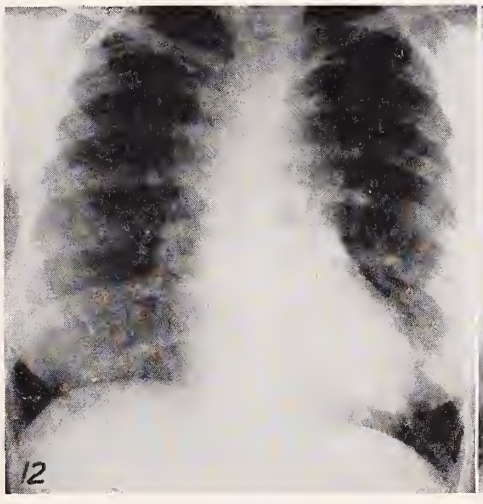


Fig. 12. Total anomalous venous connection with drainage of all pulmonary veins into a persistent left superior vena cava. The enlarged left and right superior vena cavas superiorly and the heart inferiorly produce the characteristic figure-of-eight conformation.

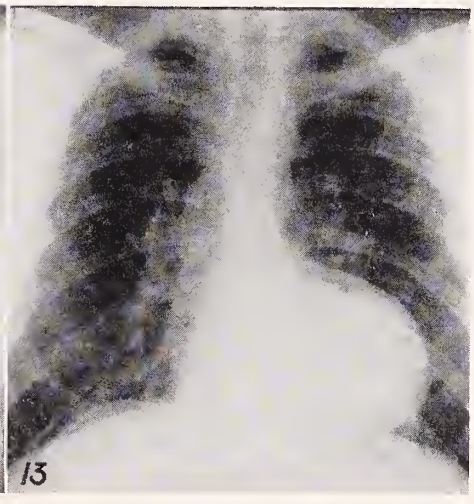


Fig. 13. Coarctation of the aorta. The inferior borders of nearly all the ribs are notched. The characteristic notch at the site of the coarcted segment is seen in the descending limb of the arch of the aorta.

The coeur-en-sabot configuration is usually described as being characteristic of tetralogy of Fallot. This configuration has been noted, however, in only about 20 per cent of patients with

tetralogy, and its absence does not by any means preclude the diagnosis. A right-sided aortic arch is more commonly associated with tetralogy than with other cardiac anomalies, being present in about 25 per cent of patients with tetralogy (Fig. 9).

The most suggestive roentgen sign of isolated pulmonary stenosis is poststenotic dilatation of the pulmonary artery. In many cases this may be the only roentgen indication of abnormality. Not infrequently the left pulmonary artery also may be enlarged and found to pulsate vigorously, while the right pulmonary artery is normal (Fig. 10).

Anomalous Pulmonary Venous Connection

The pulmonary vascular changes in anomalous pulmonary venous connection vary greatly, depending upon the number of pulmonary segments involved. This anomaly may be present without there being any evidence of the anomalous vein or veins in the roentgenogram. The pulmonary arteries may be prominent because of the left-to-right shunt that is present, and differentiation between this condition and the other conditions in which there is left-to-right shunt is usually not possible. This condition could be discussed, as a matter of fact, along with the other anomalies characterized by left-to-right shunt, but we have chosen to discuss it under a separate heading in that there are two uncommon types of anomalous pulmonary venous connection which produce rather unusual roentgenologic signs and which may be specifically diagnosed by the roentgenologist. The first is one in which all or part of the veins from the right lung drain anomalously into the inferior vena cava below the diaphragm. In these cases the anomalous vein may be seen, on the conventional roentgenogram, coursing along the right cardiac border. When this anomaly is suspected, tomographic examination of the region readily demonstrates the vein (Fig. 11). The other type is one in which there is total anomalous pulmonary venous connection and the veins from both lungs drain into a persistent left superior vena cava or "vertical vein." The striking feature of this anomaly is the figure-of-eight conformation, with the main body of the heart forming the lower half of the "eight" and the upper half being formed by the large "vertical vein" on the left and by the enlarged superior vena cava on the right (Fig. 12).

Coarctation of Aorta

The roentgenologic diagnosis of coarctation of the aorta may be made from the conventional roentgenogram of the thorax in about 85 per cent of patients with this condition. Notching of the inferior borders of the ribs was noted in 80 per cent of 105 surgically treated patients with coarctation. The site of the coarcted segment was visualized in 26 per cent. In five cases in which there was no roentgenologic evidence of notching of the ribs, the diagnosis was established by visualization of the site of the coarctation (Fig. 13).

Summary and Conclusions

The successful surgical treatment of cardiovascular anomalies is dependent upon increasing familiarity with and more exact recognition of operable lesions of the heart and great vessels. The contributions of the radiologist in the diagnosis of these anomalies and in the selection of patients for surgical treatment are of variable but definite importance. In most instances the roentgenologic findings alone will not be unequivocally diagnostic of a specific cardiac anomaly. In many instances, however, the proper diagnosis can be suggested with considerable accuracy, or the differential diagnostic possibilities perhaps narrowed to a certain group of defects, for instance, those in which there is a left-to-right shunt. Occasionally the roentgenologic findings may be specific for a particular anomaly, as in pulmonic stenosis, coarctation of the aorta, or anomalous pulmonary venous connection.

Bing[1] has stated that "roentgenographic examination constitutes the most important part of the clinical examination in congenital heart disease." This statement, not by a radiologist but by one who has made important contributions to knowledge of cardiac physiology, constitutes an unbiased opinion of the potential importance of the radiologic examination. The extent to which this potential is realized is dependent on the radiologist's knowledge of the basic pathologic, clinical and physiologic aspects of cardiac disease and his ability to integrate this knowledge with the roentgenologic findings in a given case.

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Protrusion of Lumbar Disks Causing Marked Bilateral Weakness of the Legs

• *Severe weakness of the lower extremities was present in less than 0.5 per cent of more than 4,000 patients operated on for protruded lumbar intervertebral disks. Pain was prominent early in most of these patients but, as the weakness became worse, the pain decreased or even disappeared. Severe weakness can develop within several hours in such cases, many of which are surgical emergencies. Follow-up studies available on fifteen such patients showed excellent results in five and good to fair in seven; the remaining three patients had no return of function.*

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PROTRUDED or extruded lumbar intervertebral disks may so compress the cauda equina that the patient is rendered paraplegic with sphincteric disturbances, and saddle anesthesia.

Material and Methods

The records of 4330 patients who had undergone laminectomy at the Mayo Clinic for protrusion of a lumbar disk in the last five years were reviewed. Among these were the records of twenty-one patients who had reduction in motor power in their lower extremities of 50 per cent or more. These form the basis of our report. Less than 0.5 per cent of patients operated on for protruded lumbar disks in the period under consideration fell into this category of marked weakness of the lower limbs. Patients with minimal weakness in one or both lower limbs were frequently encountered but were not included in the study.

There were fourteen men and seven women in the group. The ages ranged from thirty-two to seventy-five years, fifteen being less than fifty years old. All the protruded disks were lumbar disks: the second lumbar disk was protruded in three cases, the third in three, the fourth in nine, the fifth in one, the fourth and fifth in three, the third and fourth in one, and the third and fifth in one.

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The Study

Twenty of the twenty-one patients gave a history of previous attacks of pain in the back or in the distribution of the sciatic nerve. The majority had had many recurrent bouts of such pain over a long time, ranging up to thirty years. Three patients had had only one previous attack.

In so far as could be determined, the patients apparently recovered completely from these former episodes, and the marked muscular weakness occurred during the illness which led to laminectomy.

Onset of Episode Leading to Operation.—In the majority (nineteen patients) the onset of the episode which led to operation at the Mayo Clinic was well delineated, with the first symptom in all being sudden pain in the lower part of the back with or without concomitant pain in the lower limbs. The pain varied from mild to severe. After several days or a few weeks almost all of these patients had unilateral or bilateral sciatica. Although in a few patients the weakness developed within hours, in most the onset of muscular weakness was gradual over a period of one or two weeks. Furthermore, something usually seemed to precipitate or aggravate the weakness. Such

trivial or innocuous acts as expelling an enema, sneezing in the bent-over position, gagging while brushing the teeth, or trauma in the form of strenuous muscular effort such as lifting a heavy object, manipulative therapy and leg traction initiated the attack or converted a relatively mild one into one with marked muscular weakness.

Case Reports

Two cases are reported in some detail as examples of the onset of symptoms.

Case 1.—The patient was a farmer, aged forty, who gave a history of having had sciatica on the left side for one week, six years before admission to the clinic. Two weeks prior to admission as he was putting an 80-pound welder into the trunk of his car, he had a sudden, severe, stabbing pain in his back which extended into the buttocks. The pain persisted and was aggravated by coughing, sneezing and straining. The next day he noticed weakness of the right leg and numbness and paresthesia of the right foot. Four days later he was hospitalized, and leg traction was applied to the right leg. Within a few days his left leg also became weak and numb. Urinary hesitancy developed, and he was transferred to the Mayo Clinic.

Neurologic examination at the clinic revealed atrophy of the muscles below the knee on the right. Motor power was —3 to 4 in the muscles of the right leg and —3 in the muscles of the right thigh (—4 denotes complete loss of function; 0 denotes normal function). The left lower limb was involved only slightly less than the right.

Sensation in the perianal region was —2 to pinprick and light touch. Vibratory sensation was —4 at each malleous. Position sense was —3 at the toes. Function of the Achilles reflex was graded —4 bilaterally, that of anal reflex —4, and the tone of the anal sphincter was graded —3.

Myelography using iodophenylundecylate (pantopaque) revealed a complete block to the contrast medium at the fourth lumbar interspace. The concentration of protein in the spinal fluid was 65 mg. per 100 cc. Emergency laminectomy revealed a massive extruded disk at the fourth lumbar interspace which was markedly compressing the cauda equina. The protruded disk was removed.

Neurologic examination three months later demonstrated excellent return of motor power and good sphincteric control.

Case 2.—The patient, a man, aged forty-four, gave a history of having had recurrent sciatica on the right side for four years. Two weeks prior to being seen at the clinic he had an adjustment to his back because the right sciatica had returned. Bilateral sciatica developed immediately after the adjustment, and in a few minutes numbness in each buttock occurred. Several hours later the patient noticed difficulty in walking. The next day he was unable to walk and was unable to void.

Neurologic examination at the Mayo Clinic two weeks later revealed an almost paraplegic man with saddle anesthesia and marked disturbances of the bladder and bowel.

The concentration of protein in the spinal fluid was 200 mg. per 100 cc. Pantopaque myelography revealed a large defect at the fourth lumbar interspace. At operation a huge extruded intervertebral disk was removed transdurally.

One year later neurologic re-examination revealed only fair return of motor power and the patient still had sphincteric disturbances.

Pain.—Pain was a prominent symptom in all twenty-one cases. Early in the course of the patient's illness the pain was often severe. Late in the course it frequently would diminish or subside completely. This subsidence of pain was concident with the appearance of weakness; that is, when severe paresis and numbness occurred, pain (back or legs) tended to diminish and in some patients was minimal when they were seen at the clinic, at which time marked weakness, numbness and sphincteric disturbance were seen. In considering these relations, we repeatedly observed that, when pain began to diminish and weakness appeared, the probability was for further progression in the weakness.

Weakness.—Since only patients were included in the study who had marked muscular weakness in the lower limbs before operation, this was the prominent feature on clinical examination. The amount of weakness varied from patient to patient and invariably was more severe below than above the knee. This would be in keeping with the fact that the majority of patients had protrusions of the lower lumbar disks which compressed the lower lumbar and sacral roots. In six cases the weakness was asymmetrical, in the others symmetrical or nearly so. In no case in this series were the lower limbs completely paralyzed from the hips down, although in many paralysis below the knees was observed, and a few had marked weakness of the thigh and hip muscles. Much spotty weakness was observed; that is, adjacent muscles or groups of muscles were involved to different degrees. We could not correlate the level of the protruded disk with the distribution of muscle weakness. One patient had marked fasciculations in the legs.

Reflexes.—In the three patients with protrusion of a second lumbar disk, both the knee and the ankle reflexes were absent bilaterally. In sixteen of the remaining eighteen the ankle reflexes were absent bilaterally. The two remaining patients had a protrusion at the fourth lumbar interspace: one had no abnormality of the reflexes and the other had one normal ankle reflex. Anal reflexes were absent in ten patients. The reflexes, however, did not provide a reliable index as to the level of the protruded disk.

Sensory Disturbances.—Eighteen of the twenty-one patients had some sensory disturbance before operation. The other three had normal sensation despite marked muscular weakness. These three patients also had normal functioning sphincters.

Sensibility to pain and to light touch was most frequently impaired. The perianal area, the posterior aspect of the thigh, posterior and lateral aspects of the leg, and both surfaces of the feet were the regions usually involved; that is, the lower lumbar and sacral dermatomes. In only one case, a case of protrusion of the second lumbar disk, were the anterior aspects of the thighs involved. The degree of involvement varied greatly from minimal loss to absolute anesthesia in some areas. It was surprising to note in some instances that only minimal sensory loss was associated with marked weakness.

Diminution in position and vibratory sensation was noted in nine patients, and superficial sensory loss was seen without joint and vibratory loss in nine.

Sphincteric Difficulties.—Eleven patients presented difficulties with the function of the urinary bladder of varying degree, ranging from hesitancy or incomplete emptying to atonicity of the bladder with lack of sensation of a full bladder.

Ten patients, all of whom also had difficulty with the urinary bladder, had difficulty with the anal sphincter manifested by fecal incontinence or a lax anal sphincter on examination.

Roentgenographic Findings.—Plain roentgenograms of the lumbar vertebrae were normal or showed minimal hypertrophic arthritis or minimal narrowing of the intervertebral disk spaces.

A complete block to the flow of the contrast medium was seen in nine cases.

Spinal Fluid Studies.—Studies were carried out on the spinal fluid of twenty patients. The concentration of protein was 100 mg. per 100 cc. or more in twelve patients, in five of whom it was from 200 to 400 mg. In the remaining eight patients the spinal fluid contained from 20 to 100 mg. of protein per 100 cc.

Return of Function.—Follow-up data were available for fifteen patients more than a year after operation. Five showed excellent return of function with essentially normal motor power, normal sphincteric control and normal sensation, and were free of pain. Prior to operation four had paraparesis, and one was almost paraplegic. The duration of the weakness was from four days to three weeks prior to operation. Seven patients had good to fair return of function. All were free of pain. Three patients in this group of seven were almost paraplegic before operation. The duration of the disability had varied from one to three and one-half weeks prior to operation. In three patients the return of function was nil. Two of these patients had their weakness for two months before operation.

Comment

Several authors previously have presented cases of paraplegia from protrusion of an intervertebral disk (then called "ecchondroma"), and one of these, Goldthwaite,[1] in 1911, astutely reasoned that protrusion of a disk could be the cause of "lumbago" and "sciatica."

After Mixter and Barr's[2] work, the modern era of "the disk syndrome" began, and attention was directed to what became the more common varieties.

In the past twenty years reports have appeared in the literature describing cases of paraparesis or paraplegia caused by protrusion of intervertebral lumbar disk. Hawk,[3] French and Payne,[4] and Kennedy, Hyde and Kaufman[5] reported series of cases. Kaplan and Umansky[6] discussed in detail ten cases of protruded intervertebral lumbar disks with block on myelography. Graf and Hamby[7] in 1953 found nine cases of paraplegia in a review of 840 cases in which operation was performed for protrusion of a lumbar disk. Fairburn and Stewart[8] stressed the importance of treating such patients as surgical emergencies. Since protruded lumbar disks are common, the syndrome of paraplegia from compression of the

cauda equina, despite its relative rarity, becomes of practical importance.

In reviewing the cases in our series, we were struck by the frequency of previous symptoms so typical of the disk syndrome, frequent association of trauma, even seemingly trivial trauma, and the often minimal sensory loss in the presence of rather severe motor loss.

A long intermittent history of low back and leg pain may be seen with intraspinal tumors, and thus in some cases the differential diagnosis cannot be made easily. Bloom, Ellis and Jennett[9] reporting on thirty-six cases of intraspinal tumors noted that an incorrect diagnosis of protruded disk was made at some time during the course of the illness in a third of the cases. These authors expressed the view that temporary remissions of pain may occur in patients with intraspinal tumors. Love,[10] writing on the differential diagnosis of intraspinal tumors and protruded intervertebral disks, noted that of fifteen patients with intraspinal neoplasms, eight (53 per cent) presented symptoms of the disk syndrome, and of twenty-six with intraspinal tumors that masqueraded as protruded lumbar disk, twenty-two (84 per cent) gave a history of intermittent symptoms. Thus it seems that a history of intermittent pain in the back or of sciatica may be elicited from patients with an intraspinal tumor as well as from patients with a protruded lumbar intervertebral disk and may aid little in the differential diagnosis.

Other diseases that may have to be considered in the differential diagnosis include occlusion of the anterior spinal artery, hematomyelia, spinal extradural hematoma, extradural abscess, vascular malformations (angiomas), and metastatic tumors to the spinal column or intraspinal space. In some of these differentiation may be difficult.

Treatment

The treatment of choice seems to be early surgical management. Indeed many of these cases can be considered surgical emergencies. Although the data are suggestive only, there seems to be a relationship between the length of the preoperative weakness, the degree and the rapidity of onset in those with severe weakness and the outcome of surgical decompression.

Summary

The records of twenty-one patients with protruded lumbar disks and general weakness of the legs operated on at the Mayo Clinic in the last five years were reviewed. In a few patients the muscular weakness developed within several hours, but in the majority of patients the disability occurred over a period of several weeks. No correlation was found between the level of the disk involved and the distribution of pain. The pain, however, tended to decrease as the weakness appeared and increased. Sensory disturbances were noted in eighteen patients and difficulty with the urinary bladder in eleven; ten of these eleven also had difficulty with the anal sphincter. Return of function after operation was excellent in five patients and good to fair in seven of the fifteen for whom adequate follow-up was available. In three patients no return of function occurred. Early diagnosis and operation are important in obtaining a successful result.

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Symptomatic Management of the "Nervous" Patient

• The "nervous" patient who presents bizarre symptoms of nonorganic origin often regards the physician as an expert "tester" or "repairman" on whom he can thrust his troubles and thus avoid any responsibility for solving the personal and environmental problems that are causing the symptoms. The physician may contribute to the dilemma by unwittingly accepting the patient's desire to have something "done" to him, either medically or surgically. The patient must be shown that he is the only one who can change his pattern of living, which is the cause of the symptoms.

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MANY PATIENTS come to physicians with complaints of pains, peculiar sensations, sensory distortions, dizziness, weakness and fatigue singly and in combinations. These symptoms do not lend themselves to logical understanding; the history is unclear and fluctuating, and nothing is found on careful physical examination to explain the symptoms. Laboratory tests show nothing abnormal or, at the most, only minor deviations from normality that by no stretch of imagination could possibly explain the symptom, its persistence or its strange ability to produce such incapacity, or the demands that the patient makes on the physician. Such patients submit to, or even demand, time-consuming and expensive laboratory tests, uncomfortable examinations, long-continued use of medicaments that are expensive and often potent, and even surgical intervention. Physicians frequently allow themselves to be coerced into collaboration with the patient's wishes and demands even when their judgment tells them of the futility involved and when they have only what they know to be vain and magical hopes that the patient somehow will improve or go away.

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Origin of the Problem

How does such an irrational process develop and repeat itself over and over? Why do people communicate their difficulties in living, past and present, in such disguised and apparently meaningless terms to physicians? And why does the physician so frequently find himself treating them in such an irrational fashion, finding more and more demands made on his time and concern? Why does he persist in this contest long after he knows he is defeated? Is there any escape from or, better, any prevention for this dilemma? Perhaps a brief delineation of the roles played by both physician and patient in these situations will help discover more rational alternatives.

Many reasons exist why patients experience somatic expressions of their difficulties in living, why they fail to recognize these expressions for what they are, and why they come to physicians and then apparently endeavor to mislead them.

First, we must recognize the fact that many symptoms in this category have symbolic meanings. The commonest of this can be illustrated readily by the number of statements about interpersonal relationships that are expressed in the

language of organs, such as, "She gives me a pain in the neck," "What a headache this job is," "I have no taste for that," "This gripes me," "My heart isn't in the work," "This turns my stomach," and many others expressed in four-letter words and describing more elemental physiologic as well as psychologic functions.

Secondly, we must try to understand the "advantages" of the role of the physically ill person in our modern Western civilization. He is excused from much responsibility, blame and failure. He can expect to be treated, at least for a time, with sympathy and kindness. It is much more acceptable to express feelings in the language of organs than it is to admit to having feelings of dependency and regressive longing. It is much safer to say that one has a headache than to express directly the rage felt toward an unreasonable boss. It saves self-esteem to believe that one has a glandular disorder rather than a deep-seated sense of sexual inadequacy.

Thirdly, by describing his difficulties in terms of the physicochemical machine, the patient throws all the responsibility on the expert "tester" or "repairman" we call the physician or surgeon and evades responsibility for his own health. If the difficulty is physical or structural, the patient has only to lie still while the surgeon cuts, or to pay for the pills the internist prescribes. On the other hand, if he admits that the difficulty exists in the interpersonal field, this obviously means that he himself must participate in and be responsible for his recovery. This is only another way of describing unrealistic dependency needs that the patient attempts to extract from the physician.

Fourthly, our culture and child-rearing customs make it difficult for all of us to talk with another human being, even in the most permissive setting, about intimate personal relationships and even more difficult to talk about the feelings associated with these relationships, especially if such feelings are thought to be culturally unacceptable. A corollary to this is the fact that patients assume that the repairman wants to hear language descriptive of the breakdown of the machine and, unless he is encouraged to do otherwise, he will translate what he knows to be interpersonal difficulty into "organ" or "machine" language. The traditional methods of taking medical histories tend to encourage this type of communication. Thus, the patient talks about what he assumes he is supposed to talk about.

Fifthly, there is a phenomenon that psychiatrists refer to as "transference." Man is a remembering, symbolizing animal who, for purposes of economy, has many automatic or unconscious emotional reactions. As children, all of us had to devise a set of operations that would allow us to be as comfortable as possible in our relationships with authoritarian people, meaning parents. The characteristics of this set of operations necessarily will be related to the behavior and attitudes of the parents. The child learns to react regularly once he has learned what is necessary to keep both himself and his parents comfortable. He learns to trust or distrust them, he learns the areas in which they practice duplicity, and he learns their reactions to his dependent needs, their behavior when he becomes ill, what their limits of tolerance to frustration are, the premonitory signs of approaching anger, what modes, if any, of expression of his own anger are safe, the kinds of disturbances that occur if he has questions about sexual matters, and so on. Almost all patients experience some degree of tension in dealing with physicians about the same things.

All of this becomes a part of the patient's set of operations in dealing with authority. As the child grows, these modes are extended to deal with other figures of authority, such as physicians. If he has been reared in an atmosphere of anxiety, insecurity and inconsistency, the perimeters of his awareness and judgment are narrowed, and his emotional expectations and reactions become stereotyped, rigid and fixed.

The Physician-Patient Relationship

Thus, the patient brings all of this experience to his initial contact with the physician. The physician-patient relationship contains everything to remind the patient of his childhood days. He is weak and helpless, whereas the physician is strong and all-powerful (or at least he must act as if he were). The physician is possessed of special knowledge that the patient dares not question, at least openly. So it is that the relationship of physician and patient is made in advance. It is a relationship of the patient to the physician as an authority and not to the physician as a person.

This physician-patient relationship can be a powerful helping tool or a disruptive influence.

The transference exists and exerts its force. This is the tool that psychiatrists use in psychotherapy; it is their only effective one, but it does not belong exclusively to them. This emotional relationship is not a rigid unchangeable one. Insofar as the physician does not react in a manner similar to that of the patient's parents and insofar as he is able to talk directly with the patient about his masked and hidden feelings and make him aware of their inappropriateness to the present situation, he will diminish the patient's anxiety and give him an opportunity to become more nearly adult. This must be done with the attitude of a good parent, one who is kind, firm, benevolent and self-respecting. Anxiety or anger in the physician will interfere greatly with such an attitude.

How the Physician May Compound the Problem

The physician may contribute to the dilemma in a number of ways. First, most physicians have been trained to view the patient as a physicochemical machine. The language of medicine, the idiom in which they feel most competent and at ease, is that of the breakdown of organs. Their tools and techniques are devised to repair breakdowns or remove diseased parts. If the physician is to maintain his position as an expert, a position on which his self-esteem depends, he must stay in that area of operation in which his knowledge and experience are secure.

Secondly, the physician, from experience, recognizes the gain that the patient gets from conceiving of himself as being physically ill. He knows the adverse reaction of the patient if he does not offer confirmation of this hope or some alternative.

Thirdly, we physicians must consider that, to some extent, we all enjoy the magical powers with which some patients endow us. We may derive some gratification out of the sense of power thus gained and thus may hesitate to expose ourselves as inadequate to solve the patient's problems. Therefore, frequently unwittingly, we accept the patient's desire that we do something to him without his participation or acceptance of responsibility and start down the primrose path of practicing magic in the form of "harmless medication" or "reassuring surgery." We have been well taught that the physician must do "something," even if it means assuming unrealistic responsibility. Once such action is begun, it is well-nigh impossible to stop and still save face or the patient's trust; thus, one bit of magic leads to another.

Fourthly, physicians are products of the same culture that produces the patients and thus are also faced with hesitancy at listening to a patient's recital of intimate personal events and feelings, especially if the physician feels he must do something instead of giving the patient responsibility for change. Advice is usually worse than useless. This is made more so by the fact that in giving such advice the physician ordinarily abandons his role as an "expert," since now he must take leave of the sense of security he has in his knowledge of the person as a physicochemical machine and see him as a psychosocial being with unconscious motivation that has roots in the dim, unremembered past.

Fifthly, we frequently forget transference and tend to take our relationship with patients at face value. We expect them to relate to us as people who are trustworthy and honest. If all patients felt this way, life would be simple. However, some lie and cheat and do not follow advice and are, in fact engaged in a battle to frustrate and deceive and eventually defeat us, as they have longed to defeat their parents. To keep life as simple as possible, we ignore transference but later are angered and frustrated.

Lastly, the power of suggestion is highly overrated. If patients with emotional problems could be cured of their difficulties by suggestion, there would not be so many continuing to inhabit physicians' offices and demanding new brands of incantation.

Consequences of Avoiding the Problem

What are the untoward consequences of following such an irrational path of least resistance?

The application of knowledge derived from study of the person as a physicochemical machine is not successful in solving problems of interpersonal relationships.

The expectation of "magical" solutions is increased and perpetuated in the patient population. I suspect that this process accounts to a large degree for the increasing derogation and dissatisfaction with the medical profession as a whole in the face of marvelous advances in technical knowledge and skill in relieving physicochemical breakdowns.

The acceptance of the total responsibility to "make the patient well" by suggestion, surgery or sleeping pills does not educate him or point out to him the source of his difficulties. Consequently, it prevents him from accepting some responsibility for his distress and its relief. As long as his attention is focused on his organ system as the seat of the difficulty, there is nothing he can do to help himself.

He may suffer from secondary complications of the attempt to cure him by repair of the machine or by giving medicaments.

His confidence in, and reputation with, physicians may suffer so that when a structural illness supervenes he is denied the benefits of modern medical skill by unwillingness to see a physician or by preconceived notions of the nature of his trouble by his physician.

The complication of financial stress may increase his troubles.

How to Alleviate the Problem

What can be done to escape from and diminish the dilemma?

When reasonable skill and judgment and diagnostic acumen have been applied by history, physical examination and laboratory tests, the physician must stop the search for physicochemical causes and remedies. He must abandon his belief in magic.

The patient should be informed of the lack of findings to explain his symptoms, that there is no need to search further, and of the opinion of the physician that feelings or problems in living are the basis of the problem. Euphemisms, such as, "It's your nerves," or "nervous exhaustion," cannot be used, since such phrases encourage the patient to continue to focus on the physicochemical machine and not on environmental events. It must be made explicit that the complaints represent expressions of interpersonal conflict and emotional stress.

It will help if the physician explains that the alleviation of the problem requires effort and acceptance of responsibility on the part of the patient. The patient's objections should be anticipated by alluding to the fact that the physician or anyone else cannot solve problems by doing something to him as he had wished. The dependency aspects of the situation can thus be made clear.

Some patients can readily translate their troubles from the language of organs into psychologic language if they are given the opportunity and if they are told of the nature of their trouble. They can be encouraged to talk about their problems to a spouse, a friend, a minister or the physician, if he is so inclined, or it can be indicated that a psychiatrist might be of help. The patient's response to this invitation or suggestion is the best indication as to the likelihood of his being able to make the translation and perhaps do something about it. He should not be sent to a psychiatrist unless he requests it, since in all likelihood a forced or cajoled referral will only waste his time and that of the psychiatrist.

Many patients obviously will not respond constructively to such suggestions (and they should always be suggestions and not dictums). Three alternatives are then open to the physician and patient.

1. The patient always should know that he is free to get another opinion.

2. He may wait and see what develops. The physician must resist the temptation to offer placebo medication or another laboratory test at this point or he is lost.

3. In some patients in whom the onset is recent and in whom the precipitating environmental stress is obvious and temporary, resort to sedatives or tranquilizers may be elected, but the use of such agents should be prefaced by discussion of the fact that they are symptomatic and temporary expedients and that they are not curative agents nor problem solvers but are only given to help the patient mobilize his resources to face his problems in living.

A Final Word

All of the foregoing simply represents an attempt to eliminate or diminish irrationality, magical omnipotence and suggestion as implements in the physician's armamentarium, and to point the way toward returning the responsibility for altering living patterns to the patient, who is the only one who can change them.

Varicella Pneumonia with Prolonged Roentgenologic Change

• *It is important for the physician to be alert to pneumonia caused by the varicella virus. The use of ACTH and adrenal cortical steroids in therapy is evaluated here, with the suggestion that these drugs may prove a valuable addition to the armamentarium for this serious complication of chickenpox.*

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CHICKENPOX is usually a benign childhood disease without serious complications. Although fatal viral dissemination has occurred in the neonatal period,[1] and has been found in some cases of varicella pneumonia,[2-4] the most important complication of chickenpox is pneumonia. The pneumonia was formerly considered bacterial in nature, and appeared usually after defervescence of the chickenpox. A pneumonia in adults caused by the varicella virus synchronous with dissemination of the skin lesions was first described in 1942 by Waring.[5]

The present report is based on experience with three patients having certain unusual features who were recently observed by the authors, and on a review of the literature—to make a total of sixty cases. [2-25] Forty-seven of the sixty cases were between twenty and forty years of age. The youngest was twenty-three and the oldest seventy-one years old. There were twenty-seven female and thirty-three male patients. In thirty-five instances a history of exposure to chickenpox was obtained, frequently the contact being the patient's own children.

The typical exanthema appeared within two to three weeks after exposure. The interval between onset of rash and respiratory symptoms was known in thirty-six instances. Eleven patients experienced cough within twenty-four hours, twenty-one within two to four days and three on the fifth and sixth day. Pulmonary symptoms preceded the skin manifestations in one patient. The skin eruption was originally scanty but became widespread with the development of cough and dyspnea.

The appearance of pneumonia was almost invariably marked by high fever, striking toxicity, productive cough and dyspnea. Of fifty-four patients with detailed case reports, twenty-eight experienced hemoptysis and thirty exhibited cyanosis. Chest pain was noted in twenty-one instances. The acute phase of respiratory distress lasted from

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three to six days, and was followed by lysis of fever, diminution of cough and cessation of sputum production. This usually coincided with encrustation of the skin lesions. Nonproductive cough and easy fatigability often continued for several weeks. Of forty-nine patients with stated morbidity, thirty-three were well or discharged by the fourteenth day. Antibiotics did not influence the course of the uncomplicated case.

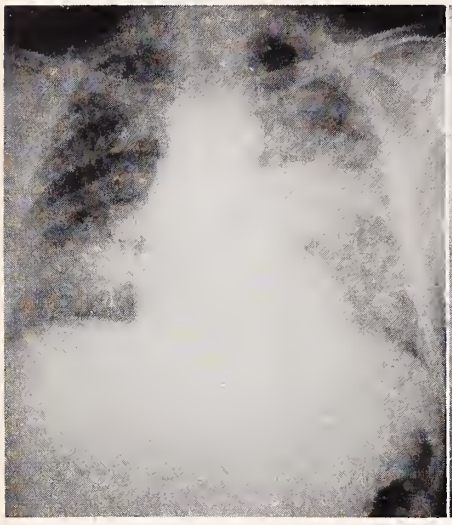


Fig. 1. Chest roentgenogram showing scattered fluffy densities and confluent perihilar infiltrate on the first day of pneumonia. (E. B., Case 1.)

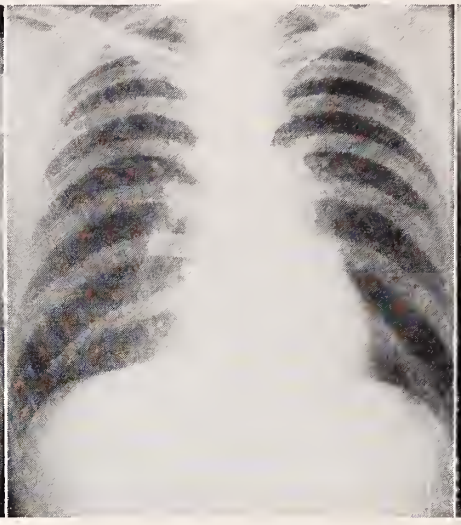


Fig. 2. Persistent miliary infiltration one month after the onset of pneumonia. (J. S., Case 2.)



Fig. 3. Persistent miliary infiltration one month after the onset of pneumonia. (A. S., Case 3.)

The rapid development deserves emphasis. One patient complained of cough and heavy breathing after getting to bed. He sat up in a chair to seek relief and was found dead two hours later.[5]

Roentgenologic examination revealed diffuse, miliary infiltration with coalescent areas spreading from the hilar regions into the lower lung fields. The pulmonary infiltration was followed in nineteen patients to complete resolution: three cleared within two weeks, nine in two to four weeks, four between one and three months and three before six months after the onset of varicella. The remainder were either not reported on (nineteen cases), lost to follow-up (twelve cases) or dead (seven cases). One patient received cortisone during the height of the pneumonia, and the lesions remained unresolved at six months. Two patients reported herein in detail exhibited persistent pulmonary infiltration after fifteen months.

White blood counts were usually below 10,000 per cubic millimeter, and differential counts were within normal limits. Blood and sputum cultures revealed no pathogens.

Seven patients expired during the acute phase of pneumonia—a mortality rate of 11.6 per cent. Three died within the first twenty-four hours and four others within one week. All were young, previously healthy adults, with the exception of one woman with pulmonary sarcoidosis who was seventy-one years of age.

At necropsy, small and large nodules were found widespread in the pulmonary parenchyma, and small vesicles were spread over the pleural, esophageal and tracheobronchial surfaces. Focal necrosis and proliferation of alveolar septal cells with intranuclear inclusion bodies, mononuclear cells, fibrinous exudate and necrosis of arteriolar walls were noted on microscopic examination.

Case Reports

Case 1.—(UMH 915360). B. E., man, aged sixty-seven, with a pruritic skin rash of five days' duration entered the University of Minnesota Hospital on July 21, 1957. A diagnosis of chronic lymphatic leukemia had been made ten months previously and remission achieved with large doses of cortisone. A maintenance dose of 15 mg. of prednisone was given daily before admission. The patient gave a history of chickenpox in childhood.

The temperature was 104 degrees orally; blood pressure, 150/80; pulse rate, 120. Maculopapules and vesicles were scattered over the trunk, arms and thighs. Shotty cervical lymphadenopathy was present. He had a hacking, nonproductive cough, but the lungs were clear to auscultation. The hemoglobin was 12.2 gm.; white blood count, 5,700 per cubic millimeter with a normal differential count. The next day he became cyanotic with rapid respirations and he appeared markedly toxic. The cough became worse, and numerous wet rales were

heard over both lungs. A roentgenogram of the chest revealed patchy densities scattered diffusely throughout both lung fields with confluent infiltrates radiating from both hilar areas (Fig. 1). Cultures of expectorate, blood and vesicle fluid yielded no bacterial pathogens. Attempts at virus isolation from vesicle fluid and serum by tissue culture technique were unsuccessful. The administration of 15 mg. of prednisone daily was continued, and chloramphenicol, 500 mg. every six hours, was given for six doses and then discontinued when negative bacterial cultures confirmed the impression of viral etiology. Dr. Francis W. Lynch, dermatologist, believed that morphologically the rash was more characteristic of herpes zoster than of varicella.

The temperature fell to normal by lysis four days after onset, and the patient improved rapidly. Twelve days after onset of respiratory symptoms the lungs were clear to auscultation. A roentgenogram of the chest on August 30, 1957, showed clearing of the miliary lesions, although the perihilar confluent infiltrate had not yet disappeared.

Case 2.—J. S., a man, aged thirty-seven, who had received 100 mg. of cortisone daily for one month, three years previously, developed chills, high fever and a rash typical of chickenpox on February 4, 1957. One son had chickenpox two weeks before, and two other children came down with the disease simultaneously with their father. The disease ran a benign course in the children.

Within two days the rash was followed by dysphagia, and, within four days, by cough productive of blood-streaked expectorate. Examination revealed a critically ill patient with high fever, confusion, dyspnea, rales throughout both lung fields and vesicles in the mouth, hypopharynx and larynx. The patient was treated at home with daily injections of ACTH and broad spectrum antibiotics with an immediate remarkable improvement. A roentgenogram of the chest one month after onset showed miliary infiltration (Fig. 2), and prednisolone (40 mg. daily) was given and continued in decreasing dosage for four weeks. One of us (Dr. Husebye) saw the patient at this time and found the lungs to be normal to auscultation. Subsequent roentgenograms of the chest (the latest taken fifteen months after the acute disease) show persistent diffuse pulmonary infiltration. The patient remains well.

Case 3.—A. S., a woman (aged fifty-five, and the mother of J. S., above) had received a prolonged course of steroid medication up to three months before onset of a similar disease picture, starting simultaneously with J. S., and following a similar pattern. The patient was treated in the same manner with ACTH and broad spectrum antibiotics. A roentgenogram of the chest one month after onset showed miliary infiltration (Fig. 3), and prednisolone was given for four weeks. At the end of this course of therapy the patient was seen by one of us (Dr. Husebye) and the lungs found to be essentially negative to auscultation. Subsequent roentgenograms of the chest (the latest taken fifteen months after the acute disease) show persistent miliary pulmonary infiltration, more marked than in J. S. The patient remains well, but with some shortness of breath on exertion.

Discussion

Varicella and herpes zoster are thought to be different manifestations of infection with the same virus.[26] Netter has demonstrated antibodies in varicella convalescent serum using zoster vesicle material as antigen and has demonstrated cross immunity in the reverse situation.[27] The occurrence of varicella pneumonia has been described in a patient exposed to herpes zoster.[7] It has been suggested that varicella virus remains dormant in the skin, suppressed by partial immunity, following clinical chickenpox, and later produces zoster in response to a variety of stimuli.[26] Case 1 would appear to represent zoster-varicella virus pneumonia as a complication of the frequent association of generalized herpes zoster and chronic lymphatic leukemia.

ACTH and adrenal cortical steroids are valuable adjuncts in the management of patients with severe toxicity due to certain bacterial infections when they are given for brief periods of time and in conjunction with effective antibiotic therapy.[28] In viral infections, which in general are not susceptible to specific antibiotic or chemotherapeutic agents, the administration of these hormones may be followed by a spread of the infection, even though the immediate subjective result seems encouraging. Thus fatal varicella was observed in two children receiving steroid medication,[29] and reactivation of cutaneous varicella by cortisone ingestion has been reported.[30] An inquiry to sixty-five physicians in this respect yielded ten additional fatal cases of chickenpox in children receiving cortisone.[31]

The persistence of the roentgenologic changes in Cases 2 and 3 fifteen months after varicella pneumonia suggests the possibility of a relationship to the use of ACTH during the acute illness, or to the previously administered adrenocortical hormones. If this were the case, then increased invasiveness or persistence of virus in the tissues during steroid medication, as have been observed in certain experimental bacterial infections,[32] are possible mechanisms by which the steroids could have enhanced development of more severe infiltration. More likely the administration of ACTH in Cases 2 and 3 reversed the toxic picture in patients who otherwise would have succumbed to their disease, and the present roent-

genologic picture reflects the seriousness of the acute phase.

The administration of prednisolone after the defervescence of the acute symptoms did not appreciably affect the resolution of the diffuse pulmonary infiltration.

Summary

The clinical features of fifty-seven cases of varicella pneumonia (reported since 1942) and three additional cases observed by the authors have been reviewed.

The first of the authors' cases was an example of zoster-varicella virus pneumonia in a patient with chronic lymphatic leukemia and the cutaneous manifestations of generalized herpes zoster. The second and third cases showed persistence of miliary pulmonary infiltration on roentgenograms of the chest taken fifteen months after the acute illness.

It is important for the physician to be alert to the occurrence of pneumonia caused by varicella virus. The often deleterious effect of ACTH and adrenocortical hormones in varicella has been discussed. However, these drugs *may* prove a valuable addition to the armamentarium in a limited number of critically ill patients with chickenpox.

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Surgical Correction of Some Deformities of the Chest Wall

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Protrusion or depression of the anterior wall of the chest may produce psychological or physiological symptoms, or both. Surgical correction of the deformity, preferably in early childhood, allays such symptoms with only small risk.

PECTUS EXCAVATUM is a funnel-shaped deformity of the anterior chest wall. It consists of a depression of the body of the sternum with the lateral walls formed by the deformed adjacent costal cartilages. It is usually noted soon after birth and tends to progress in severity. Brown[1] and Lester[2] believe that it is caused by a neuromuscular imbalance of the diaphragm, whereby the anterior-posterior fibers are overstimulated, causing retraction of the lower part of the sternum. Sweet[3] suggested that it may be due to an overgrowth in length of the ribs and cartilages, pushing the sternum more deeply into the chest. Perhaps both are right. There is a definite hereditary tendency. Two of the patients in this series were brothers, whose father and grandfather had the same deformity.

The anterior-posterior diameter of the chest is decreased, resulting in a wide, flat chest, with the funnel deformity over the lower sternum. The heart is displaced to the left and there is a decreased ventilatory capacity.[1] The costal margins flare outward, resulting in a protuberant upper abdomen. The victim of this deformity is characteristically thin, flat-chested, round-shouldered, stooped, pot-bellied, and presents the impression of being chronically weak and debilitated. Occasionally, an exception occurs and the individual presents an otherwise normal physique.

The symptoms are physical and psychological —usually some of both. The physical aspect of the victims certainly is not one to inspire pride. They are often apathetic and poor eaters. They are ashamed of their deformity and refrain from playing and mixing with other children. They are apt to have frequent respiratory infections. As they grow older and the severity of the deformity progresses thus reducing the ventilatory capacity and causing more marked cardiac displacement, more serious pulmonary and cardiac symptoms may occur. None of the patients in this report presented these symptoms, but Ravitch[4] reports a survey of such cases described in the literature.

An excellent historical survey of the surgical treatment of this deformity was made by Ochsner and DeBakey[5] in 1939. In the same year Brown[6] described the surgical repair in two cases, which is the basis of most present methods of repair. The method of repair used in this series consists essentially of: excision of the deformed cartilages, division of the attachment of the diaphragm to the lower sternum and xiphoid process, a wedge osteotomy of the sternum at the upper edge of the deformity, and raising and fixing the depressed part in normal position. A vertical incision is made in the midline. Skin flaps and flaps of pectoralis muscle are raised, laying bare the sternum and the costal cartilages. All deformed cartilages are removed subperichondrally, being sure to include excision of the cartilages in the wide flaring costal margins. An incision is made in the substernal ligament, and xiphoid process and lower part of the sternum are separated from the diaphragm. The anterior mediastinum is entered and the posterior aspect of the sternum separated from the mediastinal structures by blunt dissection. A wedge osteotomy is made in the sternum at the upper edge of the deformity. The depression in the sternum is corrected and the osteotomy secured by stitches in the periosteum. A large-gauge stainless steel wire is placed around the body of the sternum and

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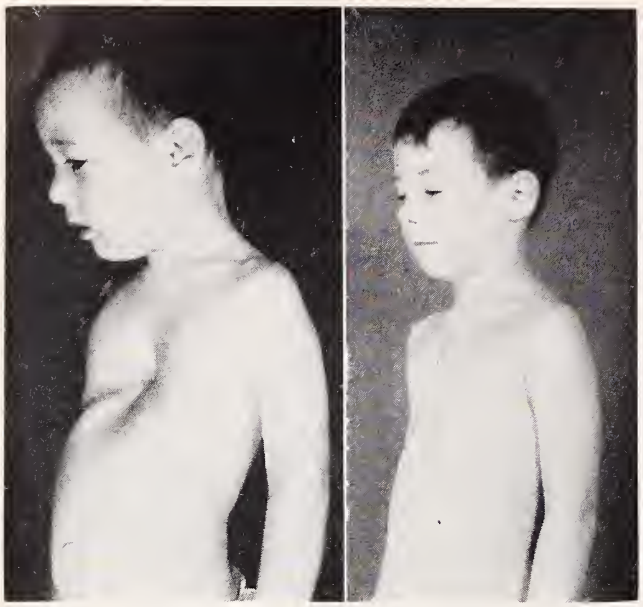


Fig. 1. Patient D. L., aged three, Pectus Excavatum. (a) Before operation. (b) Two years after operation.



Fig. 2. Patient J. J., aged eight, Pectus Excavatum. (a) Before operation, showing the dorsal kyphosis and flaring costal margins. (b) Two and a half years after operation.

TABLE I. PATIENTS TREATED FOR PECTUS EXCAVATUM

Patient	Sex	Age	Lesion Noted at	Date of Surgery	Postoperative Course	Result
P.V.	M	20 years	Age 4-5 years	3- 4-54	Uncomplicated	Satisfactory
J.J.	M	8 years	Birth	4-14-54	Uncomplicated	Satisfactory
J.K.	M	13 years	Age 4-5 years	10-28-54	Uncomplicated	Satisfactory
J.P.	F	7 years	Age 1 year	2- 2-55	Uncomplicated	Satisfactory
W.N.	M	9 years	Birth	4- 7-55	Uncomplicated	Satisfactory
D.B.	M	4 years	Birth	4-15-55	Uncomplicated	Satisfactory
A.K.	M	5 years	Birth	9-27-55	Pneumothorax with catheter drainage	Satisfactory
D.K.	M	2 years	Birth	11- 8-55	Uncomplicated	Satisfactory
D.L.	M	3 years	Age 1½ years	12- 5-55	Pneumothorax with catheter drainage	Satisfactory
D.DeF.	M	12 years	Age 10 mo.	2-27-56	Pneumothorax with catheter drainage	Satisfactory
M.B.	F	4 years	Age 1 mo.	11- 5-56	Superficial wound infection	Satisfactory
E.R.	M	6 years	Birth	5-20-57	Uncomplicated	Satisfactory
R.Z.	M	3 years	Birth	2-14-58	Uncomplicated	Satisfactory

brought out through the muscle and skin flaps for subsequent support of the sternum. The wound is closed, approximating the flaps of pectoralis major muscle and fascia to each other and to the periosteum of the sternum. No drainage is used. After closure the wires are fixed to a ladder splint of appropriate size to hold the sternum in a stable, slightly over-corrected position.

This report is based on experience with thirteen cases of pectus excavatum. There have been no deaths. The results have been satisfactory in all. The only complication of this operation was a pneumothorax in three instances. This was dealt with by the insertion of an intercostal catheter and attachment to a gentle suction device for several hours. The patients are ambulated on the first or second postoperative day. The splint and wire are removed at the end of three weeks. Although many surgeons have abandoned the use of any external fixation, it seems to me that the stability it lends to the sternum (in the corrected position until considerable healing occurs) is worth while. There have been no important complications related to its use.

A satisfactory correction has been possible in all cases. The parents and the patients old enough to express an opinion have been pleased. It is not unusual to have the parents volunteer the information that the patient has a better appetite, fewer colds, and is much more active and vigorous since having the operation.

Protrusion Deformities of the Anterior Chest Wall

Lester[7] divides these deformities into two classes: those involving the midline or sternum (pectus carinatum) and those occurring laterally and involving the costochondral junctions. The midline deformity, commonly referred to as pectus carinatum or pigeon breast, consists of protrusion

of the middle and lower sternum with bowing outward of the adjacent costal cartilages to form a prow-like anterior chest wall, mindful of the breast of a chicken. The lateral deformities are usually unilateral and consist of a buckling outward of the costochondral junctions. They may be localized to one or two rib segments or may involve all of the rib segments and result in a large deformity with tilting of the sternum. Lester[7] suggests that protrusion deformities result from abnormalities in the growth of the ribs. If bilateral, overgrowth of the ribs occurs and a midline protrusion of the sternum results. If there is a disproportionate growth on one side as compared to the other, buckling will occur at the costochondral junction.

TABLE II.
PATIENTS TREATED FOR PROTRUSION DEFORMITIES OF ANTERIOR CHEST WALL

Patient	Sex	Age	Type of Defect	Date of Surgery	Postoperative Course	Result
G.S.	F	20 years	Unilateral—severe	4-24-56	Pneumothorax with catheter drainage	Improved
R.S.	M	16 years	Midline	6-25-56	Small pneumothorax—no treatment	Satisfactory
C.H.	F	12 years	Unilateral	10-15-56	Uncomplicated	Improved
S.N.	F	21 years	Bilateral	1-10-57	Uncomplicated	Improved
J.Z.	M	16 years	Midline	6-24-57	Uncomplicated	Satisfactory
A.S.	M	16 years	Midline	2- 7-58	Small wound slough	Satisfactory

Symptoms due to physiological causes are seldom definite, and none were noted in the patients in this series. Lester[7] feels that these deformities frequently cause respiratory symptoms that are related to the prevention of free excursion of the diaphragm, thus making the cough less efficient. The cosmetic defect is apt to be even more unsightly and disturbing to the victims than that associated with pectus excavatum. Lester has established surgical correction on the principle of thoracoplasty. This principle is used in this series in the correction of lateral deformities. It yields an excellent result in small localized deformities where the remainder of the chest wall is essentially normal. In the extensive lateral deformities the general deformity of the chest wall is so great that the removal of the buckled ribs and cartilages does not restore a normal contour. In such cases, although some improvement occurs, one is apt to be disappointed in the result. I have dealt with pectus carinatum or midline deformities in exactly the same way as with pectus excavatum except that a complete transverse osteotomy is done at the upper edge of the defect instead of a wedge osteotomy. A wire around the sternum attached to an external ladder splint is used in the same way except that an intervening buttress of sponge rubber is fixed between the splint and the sternum, and the mobilized sternum is held down in the proper position rather than held out as in the correction of pectus excavatum. Three cases have been done in this manner with good results.

Discussion

In children, the presence of a significant deformity, especially if it is progressing in severity, is sufficient indication for surgical correction. The indications are more compelling if symptoms are present. Indeed, if the deformity is progressing, one can anticipate that symptoms will occur as the child grows older and the deformity increases in severity. There is some controversy over the optimum age at which repair should be done. Surgical correction can be done safely in infants, but I see little need for such haste. I prefer to wait until the child is three or four years of age. By this time we can be sure that the deformity is progressing and that surgical correction is advisable. By doing it at this time the correction is done before starting school and therefore before the child is exposed to the traumatic experiences related to the cosmetic defect. If significant symptoms are present, surgical correction can be done at any time. In adults correction is indicated by the presence of symptoms. Occasionally patients will feel so strongly about the unsightliness of the deformity that correction is justified. However, a good cosmetic result is more difficult to obtain, and the benefits of cosmetic correction have largely been lost.

In six of the patients in this series pectus excavatum was noted at birth. In the other six patients the defect was not noted until one month to four years of age.

The details of the operative technique differ in

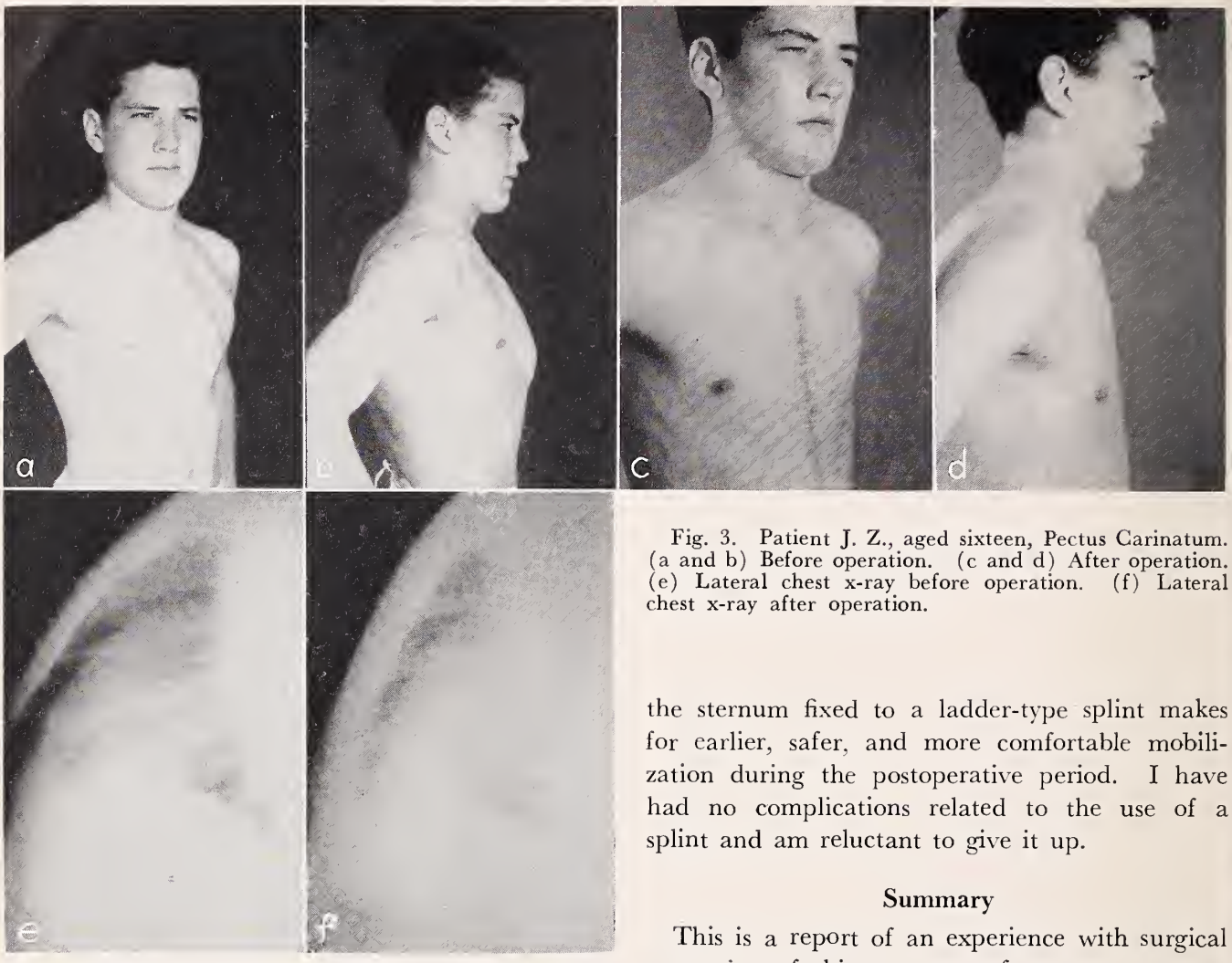


Fig. 3. Patient J. Z., aged sixteen, Pectus Carinatum. (a and b) Before operation. (c and d) After operation. (e) Lateral chest x-ray before operation. (f) Lateral chest x-ray after operation.

some slight respects to those reported by others. No stitches are placed in the bone at the site of the osteotomy. The bone in young children is very friable and will not hold a good stitch. Secure closure can be obtained by stitches in the periosteum, which is tough and strong. I have extended this technique to the closure of all types of sternotomy wounds in all ages and have found it to be quite adequate. The xiphoid process is not removed. The removal of the cartilages in the wide flaring margins is considered to be essential to a good cosmetic result. No attempt is made to shorten the intercostal bundles lateral to the mobilized sternum. Some of us still cling to the old-fashioned practice of using some type of external fixation until healing is well established. I am aware that the use of such a splint is not essential to a good result. However, the firm stability that is obtained by a wire around the sternum fixed to a ladder-type splint makes for earlier, safer, and more comfortable mobilization during the postoperative period. I have had no complications related to the use of a splint and am reluctant to give it up.

Summary

This is a report of an experience with surgical correction of thirteen cases of pectus excavatum and six cases with protrusion deformities of the chest wall. It is possible to accomplish a satisfactory correction at very small risk. The amelioration of psychological and sometimes physiological symptoms related to these deformities appears to make this risk worth while.

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Fractures About the Knee Joint

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Treatment of fractures of the knee joint requires thorough familiarity with the mechanics of this very important weight-bearing joint. Dr. Reiley reviews some of the commonly encountered types of knee fractures and the problems involved in treatment and rehabilitation.

THE KNEE joint is the largest weight-bearing joint in the body, having the characteristics of both a "hinge" and a pivot joint. Fractures involving it usually follow accidents of more or less violence, thus seriously disabling the joint and the patient, and involving a long period of rehabilitation. The often asked question, "Will my knee be stiff, Doctor?" is not entirely without foundation, since either flexion or extension contractures are highly disabling as are persistent atrophy, joint derangements, instability, traumatic arthritis, and post-traumatic synovitis with effusion.

Treatment of this group of fractures therefore involves recognition of the type of fracture involved, appropriate prompt treatment and immobilization, and adequate rehabilitation which *must* be started with reduction of the fracture and continued religiously until the desired result is obtained. This consists of quadriceps "setting" exercises during immobilization and whirlpool baths, massage, active and assisted active exercise following immobilization. Resistance exercises are started as soon as fracture healing has progressed to the point where it will allow them.

Immobilization may consist of a single hip spica for supracondylar, intercondylar or condylar fractures; cylinder cast for fractures of the patella; or a long leg cast for fractures of the proximal tibia—either "Y" or plateau fractures.

Presented at the seventh annual fall refresher, Minnesota Academy of General Practice, Minneapolis, October 15, 1957.

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A long leg cast—with the knee flexed—is sufficient for separations of the lower femoral epiphysis after closed reduction.

If traction is used, skeletal traction is preferred and pins may be incorporated in the cast to maintain reduction, but care must be exercised to prevent motion of the pins and development of a "claw foot" if a pin through the os calcis is used. It is our policy to remove pins after the plaster has been applied in order to avoid pin-track infections and foot deformities.

Since the patella is a sesamoid, it is simply a condensation of the quadriceps and patellar tendons, and a fracture of the patella with separation means a rupture of the extensor aparatus of the knee. Undisplaced fractures require only immobilization in a cylinder cast for a period of six weeks to allow healing of the tendinous structure so that active exercise may be started. Displaced fractures require open fixation, excision of part, or the entire patella. Since the patella serves to lift the extensor mechanism away from the femoral groove to improve its leverage, it must be shortened if the entire patella is removed, otherwise some loss of sustained effort in extension may occur.

Partial excision of the patella is very successful, provided the remaining portion is smooth and not involved by chondromalacia or degenerative changes. Bipartite patella is often mistaken for a fracture and if there is a question of this the opposite knee should be x-rayed.

An example of comminuted fracture of the lower pole of the patella which was excised is shown. Cylinder cast was applied for six weeks and the patient now has, to all intents and purposes, a normal knee (nine months).

Plateau fractures of the tibia may involve one or both plateaus with an inverted "Y" fracture of the proximal tibia. Those are usually produced by direct violence and result in downward and forward displacement and/or central depression of a portion of the articular surface. The medical or lateral meniscus is frequently involved and excision becomes necessary. Accurate reposition of these fractures is imperative, tears of the collateral ligaments must be recognized and repaired. They are frequently "jig-saw puzzles" to be replaced. Central depressions must be elevated and held up if necessary by a bone-graft peg or strut.

Single or double plateau fractures without central depression and with large fragments involved can often be reduced by closed methods and held. Comminuted fractures with or without central depression usually require open fixation of some type. Fixative materials include screws, transfixion bolts, or wires. Occasionally a severely comminuted fracture will require arthrodesis of the knee to secure a painless, stable knee.

Similarly fractures of the femoral condyles often require open fixation to maintain position. Again transfixion bolts, screws, femoral blade plates, screw plates, or Rush pins may be used. Both supracondylar and intercondylar fractures are notorious for length of healing time and subsequent disability of the knee joints. Open operations and fixations seem to reduce this somewhat but not as much as we would desire.

Skeletal traction with the knee flexed is often effective but involves a long period of hospitalization and constant attention. Closed reductions should usually be tried under controlled conditions on a fracture table and a single hip spica applied for a successful reduction.

Comminuted intercondylar and supracondylar fractures are among the most difficult to treat, slowest to heal, and have the longest rehabilitation period of all the fractures we have to deal with.

Of this group a recent series studied at Minneapolis General Hospital, including both open and closed method, showed an average time of 102 weeks from time of injury and treatment to discharge from active medical care and rehabilitation. These cases had other complications, however.

No effort has been made here to cover dislocations of the knee and patella, ruptures of the quadriceps and patellar tendons, avulsions of the tibial tubercle and collateral ligaments.

Vascular complications should be looked for in dislocations of the knee and in supracondylar and intercondylar fractures of the femur. They are not common, however, in plateau fractures.

Anyone treating the above-cited fractures should be thoroughly familiar with the mechanics of the knee joint that he may be better equipped to see his patient through a long and arduous rehabilitation period with a functional result as the goal.

Medical Progress

Current Status of the Hemophilia Problem

• *All that glitters is not gold—likewise, it is now evident that all "bleeders" do not have classic hemophilia. Discovery of at least four precursors of thromboplastin has made possible the recognition of a variety of different forms of "hemophilia." The only satisfactory way to separate most of these conditions is by use of laboratory tests. This article outlines the differentiation of some of these forms, which is important because the treatment and prognosis vary with the different types.*

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AS RECENTLY as 1952, a paper written on hemophilia would have been concerned with but one disease state. Since that time, several types of hemophilia have been distinguished as separate entities. Unfortunately, various investigators have used different terminologies in describing the hemophilias, and much confusion has resulted.

At the present time, at least four factors required for the formation of thromboplastin have been identified. Deficiency of any one of these factors results in a disease state that may be classified under the general heading of hemophilia. It is important to differentiate these conditions, since treatment and prognosis vary according to the

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nature of the deficiency. This paper will consider only three of the better-understood factors.

The term "hemophilia" is used here in a generic sense. The familiar disease state known prior to 1952 as "hemophilia" will be referred to as "classic hemophilia."

TABLE I. INTERACTION OF FACTORS IN BLOOD CLOTTING

Phase I
Plasma thromboplastin precursors + platelets ⟶ thromboplastin
(AHG, PTC, PTA)
Phase II
Thromboplastin + prothrombin complex* + calcium ⟶ thrombin
Phase III
Thrombin + fibrinogen ⟶ fibrin

*Prothrombin complex = prothrombin, labile factor, stable factor and Stuart factor.

Coagulation of Blood

Consideration of the nature of the hemostatic system is necessary for an understanding of the hemophilias; this system consists of the blood-clotting mechanism, the blood platelets and the vascular network.

A possible order of interaction of the factors concerned in blood clotting is indicated in Table I.

In the first phase of coagulation, the three circulating plasma proteins that have received the most study to date, namely antihemophilic globulin (AHG), plasma thromboplastin component (PTC) and plasma thromboplastin antecedent (PTA), react with the platelets to form thromboplastin.

In the second phase, thromboplastin reacts with prothrombin in the presence of calcium and three accessory factors, namely labile factor, stable factor and Stuart factor, to form thrombin.

In the third phase, thrombin and fibrinogen interact to form fibrin.

Other factors, including natural anticoagulants,[1] enter into the coagulation mechanism, but these are poorly understood at present.

Clinical Recognition of a Hemorrhagic Diathesis

The physician is usually consulted because the patient has one of the following signs: excessive bleeding after minor trauma or dental extraction, easy bruising, purpura, bleeding from the gums or nose, menorrhagia or hematuria. A history of persistent bleeding after tonsillectomy may be present. Sometimes, the only complaint is of swollen painful joints.

Certain generalizations may be made that aid in the clinical evaluation of a patient.[2] Bleeding that affects different parts of the body and is not limited to a particular site strongly suggests the possibility of a generalized hemorrhagic state. So also does a history of abnormal bleeding that dates back to early childhood or is of long duration. If a similar bleeding tendency is present in one or more blood relations, an inherited hemorrhagic diathesis must be considered a likely possibility.

Although a carefully taken history is essential in arriving at a diagnosis, care must be observed in evaluating the patient's description of his bleeding tendency. Many normal children are reported by their parents to bruise easily, so that such a history may mean little. It is also common for many normal people to bleed for several hours after dental extraction. However, continuous bleeding from a tooth socket for 48 hours or more, in the absence of a local cause, should be viewed with suspicion. A patient who has required a transfusion after dental extraction must be considered to have a hemorrhagic disorder.

It is common, also, for bleeding to persist for several hours after operations on the nose and throat, but this should not continue beyond twenty-four hours without arousing suspicion.

Hemorrhage into the joints or tissues that occurs in the absence of significant trauma usually signifies a hemorrhagic state.

Because many of these conditions are hereditary, the family history is extremely important. Careful questioning regarding the existence of any bleeding tendency in each member of the family for several generations often is revealing. For example, if several females in one family are involved, the diagnosis is almost certainly a deficiency of plasma thromboplastin antecedent (PTA).

Clinical findings often help to differentiate the purpuras from disorders of coagulation.[2] The

presence of purpura is suggested by the occurrence of spontaneous bleeding from mucous membranes and of petechiae and ecchymoses in the skin. This type of bleeding ordinarily does not occur in the clotting defects. The hemorrhage that takes place as a result of defects in the coagulation mechanism usually is related to trauma and is not limited to the skin and mucous membranes. Hemorrhage following trauma may persist for days or weeks. Large hematomas may result from bleeding into the tissues, and hemarthroses are common. The same clinical picture may be found in all the severe clotting disorders, so that identification of the specific defect must be made by other means.

Classic Hemophilia

This is sometimes called "hemophilia A." Two variations of this disorder occur and will be referred to as "mild" hemophilia[3] and "vascular" hemophilia.

Classic hemophilia results from severe deficiency of antihemophilic globulin (AHG). It is inherited as a sex-linked mendelian recessive characteristic. The female acts as a carrier, and she is asymptomatic. Half of her sons will have the disease and half of her daughters will act as carriers. Methods to detect the existence of the carrier state are presently under investigation.[4,5]

The earliest manifestation of the disease may be severe bleeding after circumcision, although many hemophiliacs appear to tolerate this procedure without difficulty. Hemarthroses, although not pathognomonic of hemophilia, are a characteristic manifestation. The joints become swollen, tender and painful. Repeated episodes may result in ankylosis and crippling. Bleeding may occur into the skin and muscles, producing painful hematomas. Although not so common, hemorrhage may involve the liver, kidneys, gastrointestinal tract and central nervous system.

With the advent of more sensitive diagnostic tests, it has become apparent that all gradations of AHG deficiency occur, ranging from the classic type with none or extremely limited amounts of this protein to mild forms of the disease associated with levels of AHG ranging from 5 to 10 per cent of normal.[6] Hemarthroses are rare in mild hemophilia. The presence of these mild forms usually is discovered after trauma or surgical procedures such as tonsillectomy or dental extraction have resulted in severe hemorrhage.

"Vascular" hemophilia is a poor term because it may mean entirely different things to different people. In this paper, the term is used to designate a disease state typified by a combination of a deficiency in antihemophilic globulin and a vascular defect consisting of coiled, tortuous vessels that fail to constrict normally after trauma.[7] It appears to be transmitted as a mendelian dominant and occurs in both males and females. Severe epistaxis often occurs, as well as hemorrhage following trauma or surgical procedures. Management of these patients is complicated by the presence of the associated vascular abnormality.

The unqualified term "pseudohemophilia" has been used for patients with the vascular defect and normal coagulation,[7] whereas "pseudohemophilia B" has been used for the variant with abnormal coagulation.

Deficiency of Plasma Thromboplastin Component (Hemophilia B)

In 1952, Aggeler and associates[8] and Schulman and Smith,[9] in the United States, and Biggs and co-workers,[10] in Great Britain, described a new disease clinically resembling hemophilia that could be corrected by the administration of hemophilic blood. The British workers termed the condition "Christmas disease," after the first patient who was recognized to have the disease in England. Aggeler's group introduced the term "plasma thromboplastin component (PTC)" to identify the previously undescribed clotting factor. They stressed the stability of the factor on storage, its high concentration in normal and hemophilic serums, and its ready adsorption on barium sulfate. Deficiency of PTC slows the generation of thromboplastin and reduces the quantity of thromboplastin formed. It has been suggested that PTC may act as a catalyst or an enzyme. It is possible that antihemophilic globulin is the precursor of plasma thromboplastin and that PTC is a cofactor essential for its rapid production.

Christmas disease appears to be inherited as a sex-linked recessive, as is classic hemophilia. It comprises about 15 per cent of all cases of hemophilia. This form of the disease cannot be distinguished from classic hemophilia on clinical grounds, and the results of routine laboratory tests are identical in the two conditions. Therefore, special laboratory procedures are necessary for identification of the specific defieiency.[11]

The differentiation of AHG and PTC deficiencies is extremely important clinically. The pa-

tient who has classic hemophilia requires large volumes of fresh blood or plasma administered frequently in order to obtain a sufficient concentration of AHG to allow coagulation to occur. The patient with a deficiency of PTC, on the other hand, will obtain a good response from smaller volumes of blood, and the blood does not have to be fresh, because of the stability of PTC. Transfusions are needed less often in a deficiency of PTC because this factor appears to be effective for 10 to 15 days after transfusion.

Deficiency of Plasma Thromboplastin Antecedent (Hemophilia C)

In 1953, Rosenthal and associates[12] identified a third type of hemophilia characterized by a deficiency of a plasma factor other than antihemophilic globulin and plasma thromboplastin component. The disease occurred in three members of one family, two of whom were females. They named the new clotting factor "plasma thromboplastin antecedent (PTA)" and determined that it was present in plasma treated with barium sulfate (unlike PTC) and also in normal serum (unlike AHG). It appears to be inherited as a mendelian dominant. The incidence of deficiency of PTA is not known, but it may be a frequent form of hemophilia.

Because the hemorrhagic manifestations appear to be relatively mild and the clotting times not extremely prolonged, this deficiency may escape detection for long periods. The disease may be first manifested by excessive bleeding after dental extractions or other minor surgical procedures.

Like PTC, the factor PTA also is stable, and stored blood or plasma may be used for treatment or prophylaxis. However, despite its stability, the effect of PTA may last only one or two days after transfusion.

Laboratory Studies

Certain clinical laboratory tests are used in the evaluation of any hemorrhagic condition. The first step is to determine whether a patient with a bleeding tendency has a defect of coagulation or abnormality of the capillaries with or without thrombocytopenia. The preliminary examinations usually ordered include a platelet count, bleeding time, tourniquet test and a coagulation time of whole blood. If results of these first three tests are normal, capillary function may be considered normal and thrombocytopenia is absent. If the clotting time of whole blood is prolonged, the patient has a defect of coagulation.

Pronounced prolongation of the clotting time is found in severe forms of hemophilia, but the time may be normal when the disease is mild. A concentration as small as 1 per cent of the normal amount of antihemophilic globulin may be sufficient to produce a normal clotting time.[13]

Prothrombin Time.—Once it has been established that a patient has a coagulation defect, it is necessary to determine the type of defect. It is convenient to divide these disorders into two categories based on the results of the one-stage "prothrombin time" test.

The one-stage prothrombin time is abnormal in deficiencies of fibrinogen, prothrombin, factor V, factor VII and the Stuart factor. The methods used to differentiate deficiencies in the prothrombin complex or fibrinogen will not be considered in this presentation. The one-stage prothrombin time is normal in classic hemophilia, and in PTC and PTA deficiencies.

Prothrombin Consumption.—In those patients who have normal clotting and prothrombin times in whom a deficiency of one of the factors in the first phase of coagulation (AHG, PTC, PTA) is suspected, the prothrombin-consumption test may be used.[14] This test is a means of indirectly measuring the amount of available thromboplastin in the blood. Pronounced impairment of prothrombin consumption occurs in classic hemophilia, but the consumption may be normal in mild forms of the disease.

Thromboplastin Generation.—The most sensitive procedure available today for detecting defects in the formation of thromboplastin is the thromboplastin-generation test. This method gives a direct expression of the thromboplastin formed during coagulation. It is possible to detect levels of AHG less than 10 per cent of normal. Since bleeding rarely occurs with greater concentrations of antihemophilic globulin, this test assumes considerable significance. The method is affected by deficiencies of labile and stable factors; therefore, the prothrombin time also must be determined in order to interpret correctly the results of this test.

Mutual-Correction Procedures.—Special tech-

niques or procedures are necessary to identify the specific thromboplastin precursor substance involved in a hemophilic state. One of the most commonly employed procedures is to test for mutual correction in mixtures of plasma or blood from the patient and from persons with known deficiencies. Because it is necessary to have available a supply of plasmas with known defects, this method is limited primarily to larger medical centers.

If one recalls that normal plasma contains all three of the precursors of plasma thromboplastin under consideration, that normal serum contains PTC and PTA, and that plasma adsorbed with barium sulfate contains AHG and PTA, another method of differentiation becomes obvious. It can be seen that a deficiency of PTA will be partially corrected by either normal serum or adsorbed plasma, that a deficiency of AHG will be corrected by adsorbed plasma but not by serum, and that a deficiency of PTC will be corrected by normal serum but not by adsorbed plasma.

Treatment

Although knowledge of the various factors concerned in coagulation has increased greatly in the past few years, little change has occurred in the treatment of severe classic hemophilia. Today, as it was twenty years ago, the chief therapeutic agent is still whole blood or plasma. The goal in the management of an episode of bleeding is to use enough plasma to keep the concentration of AHG high enough to allow hemostasis and healing to take place. Except in an emergency, it is preferable to use fresh, freshly frozen, or freshly lyophilized plasma. When these agents are not obtainable, the freshest available banked blood may be used.

It is generally accepted that AHG is more stable in banked blood than was formerly believed. Therefore, blood banked under modern conditions or plasma is probably acceptable in the treatment of classic hemophilia for several days after it has been drawn. It is best to use fresh whole blood only in those situations in which excessive loss of blood has occurred, or if anemia is present. Special lyophilized preparations of AHG are more expensive than plasma but they have the advantage of indefinite stability and immediate availability regardless of the group of the patient's blood.

The amount of plasma required to correct the coagulation mechanism in the patient cannot be determined accurately by any common laboratory test presently available. However, it has been determined that the presence of 10 to 20 per cent of normal plasma in hemophilic plasma is required to correct the thromboplastin-generation test.

Treatment varies according to the severity of the hemorrhage. In the management of severe hemorrhage or hemorrhage into vulnerable regions such as the central nervous system, it may be necessary to administer plasma in initial doses as large as 10 ml. per kilogram of body weight.[13] Thereafter, the amount and frequency of administration should depend on the patient's clinical condition; the physician must remember that the antihemophilic effect of a transfusion lasts less than twenty-four hours.

When the bleeding is not severe, as in hemarthroses, a single daily transfusion of 5 to 10 ml. of plasma per kilogram may be sufficient. Sometimes only cold applications are necessary in the treatment of localized subcutaneous hemorrhage not associated with pain or anemia. In the treatment of children, every effort should be made to avoid the development of crippling physical and psychologic sequelae. The patient or his parents are often able to advise the physician as to what to expect during any episode of bleeding and to judge whether vigorous or conservative treatment is required.

Local measures, although of limited value, are often beneficial. Ice packs may be used for hemarthroses and localized subcutaneous hemorrhage. Injection of hyaluronidase into a joint may facilitate absorption of blood. Evacuation of a hematoma occasionally is necessary; in such cases, a transfusion of plasma should be given prior to the procedure. Local hemostatic agents such as gelfoam and topical thrombin have limited usefulness in open wounds after dental extractions or small cutaneous lacerations. It is unwise to use sutures or to cauterize. However, molded devices to "splint" the gums may be useful.

Antibodies against AHG develop in about 5 per cent of hemophiliacs, and these patients become refractory to treatment. When this occurs, two alternatives are possible, namely (1) the patient should not be given another transfusion but should be given washed erythrocytes to replace the lost blood until bleeding eventually stops through healing of the wound, or (2) he should be given massive doses of plasma at the onset of any hemor-

rhage with the hope of diluting and neutralizing the antibodies. However, the latter course invariably provokes an even higher titer of these antibodies. Total exchange transfusion has been suggested as theoretically helpful; however, its effect has been evanescent, and the antibodies have reappeared quickly.

The question arises whether hemophiliacs should receive prophylactic transfusions of plasma between episodes of hemorrhage. Some hematologists consider that treatment with plasma every day, or several times a week, is warranted in order to prevent hemorrhagic phenomena.[15] Others consider that not only is such treatment difficult from a technical standpoint but that a potential hazard exists in the development of a refractory state.[15] In addition, the tendency to hemorrhage in some patients so treated has not been completely controlled even with daily transfusions of plasma. However, all agree that preoperative preparation with plasma is essential for even the most trivial of surgical procedures.

It is important to enlist the co-operation of an orthopedist in order to prevent crippling deformities. Physical therapy should be instituted as soon as the bleeding ceases.

Although steroid hormones are of no value in the treatment of hemophilia, Schulman and associates[13] considered that the oral use of prednisone daily for one week after control of bleeding into a joint aids in reducing spasm and periarticular inflammation and speeds the return of function.

Summary

Hemophilia no longer is considered to be a single disease entity. Deficiencies of the presently recognized precursors of plasma thromboplastin, namely antihemophilic globulin, plasma thromboplastin component and plasma thromboplastin antecedent, give rise to a variety of diseases. Recognition of the type of defect of coagulation that is present is important because treatment and prognosis vary according to the nature of the defect. Laboratory studies are of great importance in differentiating the various hemorrhagic states formerly considered as the disease "hemophilia."

The chief treatment of classic hemophilia and of the more recently recognized variants of this condition remains the administration of whole blood or plasma.

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Continuation Study

Diseases of the Esophagus

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Successful treatment of difficulty in swallowing calls for accurate diagnosis and ingenuity in treatment; many patients may be helped.

THE CIRCUMSTANCES which impel investigation of the esophagus are, of course, the assertion by a patient of difficulty with swallowing or, in general, any hindrance to the transit of food or liquid from mouth to stomach.

The common complaint of the sensation of a lump in the throat is not truly a disturbance of deglutition but, rather, arises from continuous, repetitive attempts to overcome spasm of the cricopharyngeal sphincter. This is a manifestation of an anxiety tension state, and the spasm may be readily demonstrated through the fluoroscopic screen when the patient swallows a spoonful of thick barium paste.

Disease of the mouth, tongue, pharynx, or larynx may cause pain with swallowing. Dysphagia may be associated with arthritis of the temporomandibular joint; cleft palate; tetanus; paralysis of the muscles of the face or pharynx by disorders of the VII, IX, XI, or XII cranial nerves; bulbar palsy; or myasthenia gravis.

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Dysphagia owing to impediment in the esophagus is usually accompanied by regurgitation of food or liquid and rumination or vomiting without nausea; sometimes, bad breath or taste is noted. Esophageal disease usually produces discomfort in the substernal region or high in the epigastrium and is associated with eating, drinking, swallowing, or is related to body position. The discomfort may be described as soreness or a burning sensation or actual pain. The pain may spread through the chest and extend to the back, the neck, the jaw, or rarely, the shoulder or arm. Pain of esophageal origin that extends to the lower arm is felt in the area of distribution of the ulnar nerve and arises from the lower esophagus, near or at the diaphragmatic hiatus.

A *diverticulum* may be one of two types: traction or pulsion. A traction diverticulum is produced by inflammatory disease outside of the esophagus that, by adhesion, pulls small sections of the wall of the esophagus into pouches. Because of affection (usually tuberculosis) of the glandular structures of the neck and mediastinum, these pouches are in the cervical and upper or middle thoracic regions. They ordinarily have funicular shapes and are broadest at the opening. The walls are composed of all the coats of the esophagus, mucosa, muscularis, and mediastinal connective tissue. Fistulas or free perforations may form from these defects. Commonly traction diverticula are symptomless.

A pulsion diverticulum is a globular, baglike protusion through a weak place in the esophageal wall. The opening is smaller than the dependent pouch, situated at the juncture of the pharynx and the esophagus, less often at the region of the bifurcation of the trachea or the crossing of the aorta, or just above the diaphragm. These are the sites of normal narrowing of the esophagus and also of weakness of the muscle. The walls of pulsion diverticula are composed of mucosa and connective tissue only.

With diverticula, the difficulty of swallowing is at first noted with liquids. If retained food and secretions cause inflammation of the adjacent esophageal wall, solids may also stick. Dysphagia usually consists of regurgitation of liquid at the time of swallowing or soon after, often with choking. With stricture from malignant disease or other cause, the initial and major difficulty is from solid food. Diverticula of the cervical segment of the esophagus may grow large and be visible or palpable in the side of the neck.

Roentgenoscopic or roentgenographic examination of the esophagus during or after the swallowing of a thick paste of barium mixed with water and acacia will disclose a diverticulum. If constriction is extensive at the site of the pouch, esophagoscopic examination may be necessary to ascertain the possible existence of carcinoma, with ulceration and accessory pocket.

A cervical diverticulum is satisfactorily treated by single or two-stage surgical excision. Epiphrenic diverticula (usually small) may also be excised or obliterated. For patients with diverticula in the middle sector of the esophagus, instructions to eat semisolid food slowly and carefully are usually sufficient.

Carcinoma is commonly found in the middle or lower parts of the esophagus and, in men, is most often seen at the distal end of the gullet. Cancers in the upper regions are predominantly squamous-cell type; those in the lower esophagus are often adenocarcinomas. The squamous carcinomas are very malignant and rapidly produce stenosis. Cancers evoke both difficult and painful swallowing, first of solid, then of semisolid foods and finally of liquids. Pain is substernal and occasionally extends to the back. Ulceration, hemorrhage and perforation may be anticipated. Because of the compulsory restriction of food intake, weakness and weight loss are notable early and are rapidly progressive.

The diagnosis of cancer of the esophagus is commonly and readily made by roentgenographic methods. Esophagoscopic examination may be done when the defect is not characteristic and, in any case, may be desirable for the purpose of biopsy. Bronchial carcinoma may invade the esophagus.

Treatment in most cases is palliative. Some cancers are accessible surgically and may be resected. High-voltage or cobalt radiation has been used in some instances. Carcinomatous strictures may be dilated by bougies passed by mouth. The condition is usually fatal within five to nine months; metastasis is found in about 60 per cent of cases by postmortem examination.

Sarcomas of the esophagus and benign tumors (such as papillomas, polyps, fibromas, and similar growths) are occasionally responsible for symptoms and often necessitate esophagoscopic study with

biopsy to establish the nature of the filling defect found by roentgen examination.

Strictures of the esophagus are the consequence of inflammation and ulceration caused by caustic and corrosive substances, frequently swallowed accidentally by children. There is great pain and inability to swallow immediately after the insult. Then, symptoms usually subside, with later return of dysphagia without pain as stenosis develops. Most strictures may be successfully dilated. The esophagus should be intubated, preferably by an intranasal plastic tube, soon after the accident when acute mouth and pharyngeal inflammation has subsided. The tube is left in place to permit feeding, prevent complete closure, and allow subsequent passage of dilating bougies.

Chronic or recurrent esophagitis may also lead to benign stricture. The names given to this condition reflect the uncertainty concerning etiology: peptic, ulcerative, erosive, reflux, regurgitative, nonspecific. Despite some doubt, irritation of the lower esophagus by gastric juice appears to be accepted as the immediate cause. The gastric contents may get into the gullet intermittently from frequent vomiting or may bathe the esophageal mucosa almost continuously because the restraining effect of the cardia is faulty or lacking. Certainly, the association of esophagitis with gastric and duodenal ulcers, gastric resection, and sliding hiatus hernia is common enough to assume that when gastric juice flows into the esophagus (for whatever reason) inflammation and ulceration of the mucosa ensue. Such changes have been seen by the esophagoscope and found by postmortem examinations.

Esophagitis may produce substernal pain (often when the patient is eating), dysphagia, regurgitation, heartburn and a sensation of pressure. Pain or distress is often more noticeable when in the horizontal position or during stooping or bending. With deep ulceration, pain may extend to the left side of the thorax, posteriorly. The disease may progress to stenosis.

Treatment is planned to prevent reflux of gastric juice or to counteract the deleterious effect of reflux. Frequent feeding of small amounts of nonirritating food, avoidance of bending movements, and sleeping with the head and shoulders elevated usually accomplish the purpose. Antacid preparations between meals and at bedtime are beneficial. Strictures may be dilated. Permanent stenosis requires surgical consideration. Deep strictures may be excised, and, depending upon location and associated conditions, resection and anastomoses of the esophagus, jejunum, and stomach may be done.

Peptic ulcer of the esophagus forms in the lower part—in the ampulla or vestibule. The ulcer is usually single and is round, oval, or linear, with a sharply defined edge and without much rim. The smooth crater is filled with grey exudate and granulation tissue. In short, the ulcer has the exact appearance of the single benign peptic ulcer of the stomach. Ulcers appear in what Barrett[1] calls "the lower esophagus lined with columnar epithelium." When the patient is eating pain may be noted at the site of the lesion, high in the epigastrium or subxiphoid region, and, occasionally, substernally up to the episternal notch. The pain may extend around the costal margin, through to the back, or to the interscapular region. Burning distress or pain may be felt between meals and is relieved by taking food or alkali. The ulcer may bleed—evidenced by hematemesis or melena—or it may perforate.

Esophagoscopic examination may aid in distinguishing a benign from a malignant ulcer. The management consists of small, frequent feedings of nonirritating food, control of acidity by antacid preparations, and relaxation of attendant spasm by administration of tablets of ½ gr. of phenobarbital and ⅛ gr. of belladonna, three or four times daily. Hemorrhage, perforation, or stenosis require surgical therapy.

Cardiospasm is, as the name implies, a condition of more or less permanent tonus of the cardia and lower esophagus. No true sphincter has been demonstrated at this point, but the musculature is undoubtedly capable of sphincteric action or, perhaps, fails to relax. Greatly increased tone, or inability to relax, is possible by an autonomous mechanism. Smooth muscle in lower forms of life tends to remain persistently contracted when separated from ganglion cells. The only constant, significant abnormality found in cases of human cardiospasm has been diminution in number or entire absence of ganglion cells of the myenteric plexus.

At the onset of cardiospasm, patients have difficulty with swallowing solid food and later refuse even liquids. In the early stages, before the

esophagus has dilated, material is regurgitated in the same state in which it was swallowed. Later, if and when the esophagus has dilated, a considerable quantity of solid food and liquid may be retained for long periods of time, and only upper layers are spilled out of the mouth. The regurgitated material contains no gastric juice but may be changed by fermentation or putrefaction, depending upon the duration of retention. Esophageal mucosa may be inflamed but is seldom ulcerated. Hemorrhage or perforation is rare. Cardiospasm usually is not painful; however, substernal distress or epigastric fullness is occasionally noted. Sudden spasm may be precipitated by emotional disturbance, but a psychogenic basis for chronic cardiospasm is difficult to establish.

Usually a tentative diagnosis of cardiospasm can be made from the story the patient relates. This is later confirmed after seeing the funnel constriction of the lower end of the barium-filled esophagus—by fluoroscope or on x-ray films. The esophagus may be dilated, sometimes enormously, with a pouch lying on the diaphragm. Generally, the outline of the conical constriction is quite smooth and even, but accumulated material may distort the margins of the barium shadow to simulate a carcinomatous defect. In this event, esophagoscopic examination, after thorough aspiration and washing, may be necessary to establish the diagnosis.

Forceful dilation is satisfactory for most patients with cardiospasm. This may be done with air or water-pressure bags passed through the contracted segment. More forceful dilation may be done using a metal instrument with a basket arrangement made of flexible strips at the end that is collapsed until in place, then suddenly and strongly expanded. The purpose of either of these maneuvers is to tear the contracted esophageal muscle. One dilation usually suffices, but more may be necessary. When these methods fail, the Heller cardioplasty, properly done, is satisfactory. This operation is simply a longitudinal incision, 4 to 5 in. (10 to 12.5 cm.), through the muscles of the lower esophagus and the serosa and muscles of the upper stomach, leaving the lining mucosa of each organ intact.

Hiatus hernia is of two types: (1) rolling, or paraesophageal hernia and (2) sliding hernia, which may include the short esophagus type that is the result of chronic esophagitis; congenital short esophagus is rare. The same elements operate in the formation of both types, with slight differences for each. Paraesophageal hiatus hernia probably occurs in individuals who have, because of structural defects, esophageal openings through the diaphragm larger than normal. Under particular circumstances, small or large portions of the upper stomach may protrude through a weakness of the ring at this point. When the cardia is also incompetent, gastric juice may regurgitate and produce inflammation, fibrosis, and scar contracture, with subsequent shortening and often stricture. This course of events makes a sliding hernia.

Both sliding and rolling hernias are aggravated by thoracic kyphosis, increased intra-abdominal pressure, obesity, coughing, or vomiting. The symptoms are intermittent at first, unless, after a violent paroxysm of coughing or vomiting, a portion of the stomach becomes incarcerated. The patient has dysphagia, regurgitation and pressure sensation or pain high in the epigastrium or under the sternum that may extend to the back. The discomfort is likely to occur when the patient is lying down or after a heavy meal when the stomach is distended or the colon is overfilled. Not infrequently, pain simulates angina pectoris or biliary colic. Bleeding may be notable as hematemesis or melena or be responsible for anemia.

Hiatus hernia is readily discovered by fluoroscopic and roentgenographic examinations of the barium-filled esophagus and stomach. Hernia is not difficult to distinguish from contraction rings of the ampulla. Esophagoscopic examination yields information about the extent of inflammation, ulceration and stricture with the sliding hernia but is not helpful for paraesophageal hernia.

Treatment in the early stages, when distress occurs only at night, with or between meals, or in particular body positions, is the same as that suggested for esophagitis and esophageal ulcer. When symptoms persist or complications arise, surgical correction of the condition is necessary. The operation may be simple repair of the paraesophageal hernia, resection of the diseased esophagus, or excision of a stricture, with jejunogastric anastomosis.

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Case Presentations

Virilism Due to Adrenal Adenoma

Discussion of Differential Diagnosis

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Present methods of treatment make possible the satisfactory management of many patients with virilism, but successful outcome depends upon recognition of the syndrome and subsequent determination of the specific etiology. The occurrence is unusual enough so that a report of a single case with urinary steroid studies, and a brief review of the subject seems warranted. Virilism is best defined as an abnormal endocrine state characterized by the symptoms and signs of excessive androgen production.[1]

Case Report

Mrs. A. G., a white woman, aged twenty-one, was first seen by our group on October 11, 1951. She presented herself because of failure to menstruate since August 26, 1951. Her history disclosed that menarche had occurred at the age of thirteen years, and regularly occurring menstrual periods were noted until 1950. At that time, the interval between menstrual periods became irregular and menstruation at times occurred as often as every two weeks. Because of failure to menstruate for forty-five days, the possibility of pregnancy was considered. However, two negative frog tests done one week apart and the absence of physical changes of pregnancy as late as October 22, 1951, led us to dismiss this possibility.

The patient was next seen in June, 1953. The history at that time revealed that her menstrual periods had occurred irregularly until February, 1952, following which menstruation ceased entirely. Complete physical examination including examination of the pelvis was normal except that moderate hirsutism was noted. Laboratory examination disclosed a normal routine urinalysis. The peripheral blood disclosed a hemoglobin of 18 grams, wbc 14,150, neutrophils 70, lymphocytes 26, eosinophils 1, basophils 1, monocytes 2. The BMR was 0%. The patient was not seen again until October 29, 1956.

The patient at this time again presented herself because of amenorrhea dating back to February, 1952. Her only other complaint was easy fatigue. A review of symptoms revealed increased growth of body hair, increased libido and huskiness of her voice all for about one year. Examination showed a masculine type of body configuration. There was acne of the skin of the face and shoulders and the skin generally was coarse and somewhat thickened. Hair growth was masculine in distribution with a heavy growth on the face, chest, abdomen and lower extremities. The blood pressure was 128/84. Her weight and height were 130 pounds and 62.5 inches respectively. No abdominal masses were palpable. Pelvic examination disclosed an enlarged clitoris which measured 2 cm. in length. No abnormalities of the uterus or adnexa were found. Routine laboratory

examination disclosed the following: urinalysis, normal; hemoglobin 15.3 grams; white blood count 8,900; neutrophils 69, lymphocytes 28, eosinophils 2, monocytes 1.

Clinically, it was evident that we were dealing with a virilizing syndrome. Further studies were therefore directed at determining its etiology. A twenty-four-hour specimen of urine collected on November 17, 1956, was found to contain 160 mgm. of 17 ketosteroids. Because of the very high 17 ketosteroid level, difficulty was experienced in obtaining an exact level for the 17 hydroxycorticoids but a level between 6 and 11 mgm. was obtained. This level was considered normal. The Allen test for dehydroisoandrosterone was positive.[2] Following these reports the patient was placed on hydrocortisone in a dosage of 60 mgm. orally every eight hours for four days. On the fourth day urine was again collected for a twenty-four-hour period. This urine specimen contained 326 mgm. of 17 ketosteroid. These findings were interpreted as indicating the etiology to be a tumor of either adrenal or ovarian origin.

On December 21, 1956, the patient was admitted to the hospital where perirenal injection of air was performed. Roentgenograms disclosed a well defined tumor of the right adrenal gland measuring about 5 cm. in diameter. Following this procedure the patient was discharged and readmitted on January 5, 1957, for excision of the tumor.

The patient was given prophylactic corticoid therapy for thirty-six hours preoperatively. On January 7, 1957, an operation was performed through the bed of the right twelfth rib. In order to obtain more adequate exposure, a section of the eleventh rib was removed. The right kidney was depressed inferiorly and the tumor was easily palpated. It was removed by sharp and blunt dissection. From the medial aspect of the tumor, two small veins entered the inferior vena cava directly. These were ligated and severed. The entire right adrenal gland was removed with the tumor. The patient withstood the procedure well.

On examination, the tumor grossly was soft and fleshy in consistency and had a yellowish brown color which was mottled by areas of hemorrhage. The tumor was oval in shape and measured 68 mm. x 42 mm. x 48 mm. Together with the attached adrenal gland the specimen weighed 70 grams. A well defined intact capsule covered the tumor except that no line of cleavage could be found between it and the attached adrenal gland. Microscopically the tumor was made up of large cells which showed a definite tendency to arrange themselves in cords. The size of the cells varied considerably and occasional mitotic figures were seen. Within the abundant granular cytoplasm of the larger cells brown droplets could be identified. Scattered throughout the tumor were smaller cells with small nuclei and clear eosinophilic cytoplasm. It was the opinion of the pathologist that although the microscopic picture indicated active growth, the tumor represented a benign adrenal adenoma.

Postoperatively the patient did well receiving supportive corticoid therapy. The dose was gradually decreased beginning on the 3rd postoperative day. On the 6th day following the operation she was discharged. A twenty-four-hour specimen of urine collected on February 6, 1957, showed 10.7 mgm. of 17 ketosteroids. On February 10, 1957, menstruation occurred for the first time since February, 1952. Flow continued for 4 days and was normal in all respects. Normal menstrual periods occurred at regular intervals until June 24, 1957. The patient was seen August 11, 1957, at which time pregnancy was confirmed. On March 20, 1958, following an uneventful labor, the patient gave birth to a normal male infant.

Discussion

Virilism is a symptom complex which is secondary to the excessive production of androgens. The symptoms and signs produced are illustrated by the case presented. The most frequently suspected cases of virilism usually represent "simple" or "idiopathic" hirsutism. This condition is recognized by the fact that it is usually familial, it is common in females whose ancestors originated in the Mediterranean area, and it is not associated with the other symptoms and signs of excessive androgen production. It is unusual for hirsutism to occur as the only sign of excessive androgen production in patients with androgenic lesions of the adrenal gland.[1] The presence of virilism in the patient is the best indicator of androgenic activity,[3] but the finding of an elevated urinary 17-ketosteroid excretion is a very valuable confirmatory finding. Urinary 17-ketosteroids represent the degradation products of several different hormones some of which have no known biological activity and others which have no androgenic activity, but it is unusual to observe instances of virilism due to adrenal adenoma with a normal 17-ketosteroid level. In some instances with normal 17-ketosteroid excretion, a distinctly decreased excretion has been noted following appropriate therapy.[1] "Idiopathic" hirsutism is characterized by a normal total 17-ketosteroid excretion leading some observers to postulate an increased sensitivity of the hair follicles to normal amounts of androgens,[1] while other observers have found subtle changes in various fractions of adrenal hormones which they interpret as indicating altered adrenal function as the probable causative factor in many instances.[4]

Virilism can result from a number of different lesions or circumstances all of which have the common denominator of excessive androgen production. The most frequent cause is testosterone administration for such conditions as carcinoma of the breast. In a study of patients receiving 50 mgm. of testosterone propionate intramuscularly daily, which is sufficient to produce the syndrome,

it was found that the urinary 17-ketosteroid excretion was increased approximately 8 mgm. per twenty-four hours.[1] Various methods yield slightly different values for normal 17-ketosteroid excretion, but a representative figure is 6 to 15 mgm. per twenty-four hours.[5] Because of the wide range of normals, it is thus apparent that in certain instances it is possible for the syndrome of virilism to occur in the presence of a 17-ketosteroid excretion in the normal range.

The spontaneously occurring instances of virilism are the result of androgen producing lesions of the adrenal gland, ovary, or "adrenal rest" tumors which may occur in the ovary and elsewhere in the abdominal cavity outside the normal site of the adrenal cortex.[6] Virilizing lesions of the adrenal gland include either hyperplasia or tumor which may be malignant or benign. The terminology by which androgen producing tumors of the ovary are recorded in the literature is confusing and no doubt some of the listed lesions represent identical conditions. Those listed include arrhenoblastoma,[7] Leydig-cell tumors,[6] luteoma,[1,6,8] hilus-cell tumor,[1] and the already mentioned adrenal rest tumor. In one instance the occurrence of virilism in an individual during two pregnancies was thought to be the result of hyperplasia of the ovarian lutein cells rather than tumor.[9]

In a patient who shows the stigmata of virilism, physical examination is frequently of no help in localizing the site of the lesion. This is readily understood with adrenal tumors since by virtue of location they must attain considerable size before they become palpable, but it is also true of ovarian lesions which are more accessible to physical examination. Many of the ovarian lesions which produce excessive androgens are small and not palpable on pelvic examinations.[7,8] Even should a tumor be palpable, one is still faced with the possibility of an incidental tumor rather than a causative one.

Hormone studies are of much value in differentiating adrenal hyperplasia from the other causes of virilism, and must be done in each individual because of the difference in therapy. When the urinary 17-ketosteroid excretion is normal or near normal in the presence of virilism, the cause is most likely to be an ovarian lesion.[1] To carry out hormone studies one should first determine the base line urinary excretion of 17-ketosteroids and follow this with the administration of 10 to 25 mgm. 9-alpha-fluorohydrocortisone daily in divided doses or equivalent amounts of prednisone, hydrocortisone, or cortisone for a period of four to five days.[6,10] In the presence of a considerable decrease in 17-ketosteroid excretion following such treatment, one may assume the presence of adrenal hyperplasia and continue with the administration of corticoids in amounts sufficient to keep the ketosteroid excretion at a normal level. It should be added that 9-alpha-fluorohydrocortisone has too great a tendency toward salt and water retention to be used in the required doses for prolonged periods of time, and because of less such tendency prednisone or prednisolone are probably the treatment of choice.[10] It has been recommended that hyperplasia of the adrenal gland should not be assumed unless there is also an excessive increase of 17-ketosteroid excretion in response to stimulation with ACTH.[6] This has been shown to be true in Cushing's syndrome where the stimulation test with ACTH is probably superior to the inhibition test with corticoids in separating tumor from hyperplasia, but we have been unable to find a single instance of virilism due to adrenal hyperplasia that did not show a significant decrease in 17-ketosteroid excretion in response to administered corticoids. There are reported instances of an increased 17-ketosteroid excretion in response to ACTH stimulation and a decreased 17-ketosteroid excretion in response to 9-alpha-flurohydrocortisone[6,11,20] when the lesion was subsequently found to be an adrenal carcinoma. It would seem that in the presence of "pure" virilism with a normal 17-hydroxycorticoid excretion one is justified in assuming the presence of adrenal hyperplasia if a significant drop in 17-ketosteroid excretion occurs following the administration of corticoids with the reservation that should normal excretion levels not be obtained and maintained after a reasonable length of time the case should be reconsidered with the possibility of a tumor kept in mind. In the presence of virilism, should no significant inhibition of 17-ketosteroid excretion occur following the administration of corticoids then the lesion can be assumed to be tumor of either adrenal or ovarian origin. Fractionation of the urinary 17-ketosteroids and determination of the beta or III fraction (dehydroisoandrosterone) may be of help in establishing the presence of a tumor since it is most often elevated under such conditions[2,12] but it may less frequently be elevated in virilism due to adrenal hyperplasia.[3]

In the absence of localizing physical findings an

intravenous pyelogram should be done searching for evidence of renal displacement. Following or at the same time the pyelogram studies are done, presacral or perirenal gas injection should be carried out. There has been considerable discussion as to the advisability of doing air studies but with proper precautions this procedure is safe and of much value in localizing adrenal tumors.[31] Recent work done with pure carbon dioxide indicated that the great solubility of this gas in serum makes it a safe agent to use as a contrast medium for tissue injection.[17] Indeed, doses upto 100 cc. have been injected intravenously into humans for intracardiac visualization and comparably larger amounts into animals without adverse effects. False positive tumor shadows or confusing pictures can at times occur.[7] Should none of these procedures localize the lesion, then pelvic exploration is necessary for direct examination of the ovaries. In the absence of an ovarian lesion the more formidable exploration of the adrenal glands must be carried out. It should be mentioned that some individuals prefer to omit gas studies and proceed with exploration of the ovaries and adrenal glands all in one surgical procedure.[14]

The results of treatment have been gratifying except in those instances due to adrenal carcinoma.[15] Prolonged therapy with corticoids is necessary in the presence of adrenal hyperplasia. Even after the removal of an adrenal adenoma the masculinizing changes induced by the tumor are not all reversible. The occurrence of pregnancy following the removal of a virilizing adrenal tumor as in the reported case is an unsual event; however, several other similar cases have been reported in the literature.[15,16,18,19]

Summary

A patient with virilism due to adrenal adenoma is presented. Six months following removal of the tumor pregnancy occurred. The differentiation of virilism and "simple" hirsutism is stressed, and the method by which androgen producing lesions can be localized is discussed. Appropriate therapy consists of long-term corticoid administration in the case of adrenal hyperplasia, and surgical removal in the case of an adrenal or ovarian tumor.

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Fatal Adrenal Cortical Failure Following a Medical Emergency

Patient Previously Treated with Cortisone

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IT IS now generally accepted that the use of either ACTH or cortisone may result in diminished adrenal cortical function without clinical manifestations occurring until the organism is subjected to stress. To date, several fatalities have been reported which occurred during the immediate postoperative period, and in which it was felt that acute adrenal insufficiency resulting from the prior use of cortisone was responsible for the deaths.[1,2,3]

Inasmuch as the above-mentioned fatalities followed a surgical procedure, we feel that it is of importance to report the occurrence of death in a case in which the basic etiologic factor was the same but in which the stress factor was a medical emergency rather than a surgical procedure.

Case Report

A man, sixty-six years of age, was first seen by us three days before his death. He had had asthma for twenty-five years, but the attacks were not frequent or disabling. During the past five years he had received intermittent desensitization treatment for his asthma. One year before his death he had a severe asthmatic attack and had been placed on cortisone. The cortisone was continued in a relatively small dose 25 to 50 mg. daily—for the enusing year.

Two weeks before admission to the hospital, he developed edema of the legs and increasing dyspnea. The cortisone was discontinued and the edema and dyspnea disappeared. Five days before his death, he again developed edema and dyspnea. He was admitted to the hospital three days before his death. It was at this time that we first saw him in consultation. His blood pressure was 112 mm. Hg. systolic and 70 mm. Hg. diastolic. The pulse was 108 per minute. Marked emphysema secondary to chronic asthma was present. Moist inspiratory rales were present in the lower one-third of both lung fields. There was marked dyspnea and moderate cyanosis of the nails and lips. Examination of the heart revealed a regular rhythm. No murmurs were present. Pitting edema was present in both legs to midway between the ankle and knee. The remainder of the examination was not remarkable.

The patient was digitalized with 1.2 mg. of digitoxin orally over the next two days and placed on a maintenance dose of 0.2 mg. of digitoxin daily. One cc. of mercuhydrin was given intravenously. A good diuresis resulted. He was carefully given intermittent oxygen and carbon dioxide by mask with beneficial results. The following day a rapid irregular heart rate was noted. An electrocardiogram showed a nodal tachycardia of 170 beats per minute but was otherwise nonspecific. The lungs were now clear to ascultation and percussion except for scattered ronchi. Quinidine was administered, and there was a gradual return to a regular rhythm and a slowing of the pulse to 90 beats per minute. The patient's condition remained unchanged over the next eighteen hours. Following this there was a gradual increase in pulse rate, and the temperature rose to 99° F. orally. Pulmonary edema recurred. Two cc. of mercuhydrin was given intramuscularly. The blood pressure began to fall slowly to a level of 36/0. The patient became unresponsive and expired.

At postmortem examination the heart weighed 500 gm. There was hypertrophy of the wall of the right ventricle. The endocardium, myocardium and epicardium were normal. The coronary arteries showed very little sclerosis and all of the valves were normal. The lungs weighed 1,500 gm. There was diffuse congestion and edema in both lungs but most marked in the lower lobes. There were no pneumonic consolidations present. Emphysematous blebs were present in the right lower lobe. The adrenal glands were atrophic; however it was impossible to obtain an accurate weight

of the adrenal glands since the surrounding fat was so adherent that it could not be completely separated. It was estimated that the combined adrenal weight was about 4 gm. or 50 per cent of normal. The cortex of each adrenal was thinner than normal and greyish-brown in color instead of the usual orange. The spleen, liver, gastrointestinal tract, pancreas, lymph nodes, spine and genitourinary tract were normal. Unfortunately permission to explore the skull was not given.

Microscopic examination of the adrenal cortex revealed that the narrowing of the cortex was due to loss of lipid material. There was no demonstrable decrease in the number of cells in the adrenal cortex. A Sudan IV stain showed a marked loss of lipid material throughout the three layers of the cortex but especially marked in the outer half of the cortex. The medulla was normal.

Comment

This patient had received a relatively small dose of cortisone over a prolonged period of time. The depletion of adrenal cortical lipid material and atrophy of the adrenal cortex as described in this case are identical with those reported by Salassa *et al*[2] in their study of the alterations in adrenal glands following the use of cortisone. Studies by Bennett *et al*[4] indicate that the administration of cortisone for a period of five or more days in a total dose of as little as 450 mg. may lead to microscopic evidence of adrenal cortical atrophy.

It is our feeling that there were two factors which accounted for the precipitation of acute adrenal cortical failure in this case. The individual as a whole and the atrophied adrenals in particular had been subjected not only to the stress of cardiac failure presumably accelerated by the salt-retaining ability of cortisone, but also to a potent diuretic with its attendant loss of sodium. It may be postulated that the loss of sodium caused by the diuretic was sufficient strain to precipitate acute adrenal failure in an already damaged adrenal gland.

The frequent use of cortisone and the even more common use of diuretics in medicine today will undoubtedly cause similar situations to arise again. The physician must be alert to this possibility when tachycardia, slight fever and falling blood pressure occur in such a patient. This triad of symptoms—tachycardia, falling blood pressure and slight fever, in the absence of other causative factors—is the first indication of acute adrenal cortical insufficiency. Unfortunately, the above-mentioned signs are not especially helpful from a differential diagnostic point of view in the cardiac patient. It would seem that the syndrome would have to be suspected if the cardiac patient's condition appeared to be getting worse in spite of good control of the fundamental cardiac problem.

It should be emphasized that at the time of this patient's death, he was relatively well compensated from a cardiac standpoint. The lungs were clear to ascultation until shortly before death, no hepatic enlargement existed and there was no peripheral or presacral edema apparent. These findings were in marked contrast to those present when he was admitted to the hospital. It should also be emphasized that the patient was not on a low sodium diet prior to his admission to the hospital nor had he previously received mercurial diuretics. Therefore it is unlikely that a low sodium syndrome existed.

It is suggested that the stress associated with severe medical illness may precipitate acute adrenal cortical failure in patients who have previously received cortisone. This is more likely to occur in patients suffering from diseases which necessitate the use of diuretics with their attendant loss of sodium.

Summary

A death due to acute adrenal cortical insufficiency secondary to the use of cortisone is reported. The precipitating factor was medical rather than surgical.

Careful consideration must be given to the potential hazard of acute adrenal cortical insufficiency in patients who have received cortisone and in whom salt-loosing diuretics must subsequently be used.

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Editorials

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ACID-FAST BACILLI

Importance of Their Proper Classification

In Bergey's Manual of Determinative Bacteriology (1948), the genus *Mycobacterium* is considered to include acid-fast bacteria that have no true mycelium or spores. In addition to the few well-known acid-fast bacilli such as *Myco. tuberculosis* and *Myco. phlei,* there are acid-fast microorganisms that obviously belong in this genus but that have not been described sufficiently to give them a species name. These are listed as *Mycobacterium species (sp.* for singular and *spp.* for plural). Why call such microorganisms "atypical acid-fast bacteria" when an accepted scientific term exists for them, namely *Mycobacterium sp.*?

It is proposed here that the term "atypical acid-fast bacteria" be discontinued and that *Mycobacterium spp.* be used for unidentified acid-fast bacteria. A plea is also made for complete and detailed bacteriologic studies on cultures of *Mycobacterium spp.* of whatever source. Accounts of isolating "atypical acid-fast bacteria," "yellow bacillus" or "chromogenic acid-fast bacteria" are meaningless if the bacterium in question is not described sufficiently to distinguish it from other known members of the genus *Mycobacterium.*

A cursory review of the literature reveals that the group of acid-fast bacteria has been neglected taxonomically. The situation is still chaotic. It is natural that the early workers were concerned primarily with the tinctorial resemblance to tubercle bacilli of certain microorganisms that were not pathogenic for experimental animals. These organisms have been recovered from lesions and exudates of man and animals as well as from soil, water and various foods. To emphasize their similarity to tubercle bacilli and to give them some sort of designation, they have been lumped into categories such as "tubercle bacillus-like bacteria," "pseudotubercle bacilli," "paratubercle bacilli," "saprophytic acid-fast bacilli" and, more recently, "atypical acid-fast bacteria." The term "paratubercle bacilli" is still used in some European literature. Some authors recognize that this is inadvisable because of confusion with *Myco. paratuberculosis,* the cause of hypertrophic enteritis in cattle. In some papers, the term "saprophytic acid-fast bacteria" is used for all forms other than the recognized pathogenic species. This is unfortunate since some of these actually may be parasitic. Certainly, some of the parasitic forms can exist and grow saprophytically.

Hundreds of different *Mycobacterium spp.* have been isolated from various sources. In some instances, they were given common names to indicate their origin, such as "butter bacillus," "grass bacillus" and "manure bacillus." Fortunately, there are but few eponymous terms such as Stefansky's bacillus or Friedman's bacillus, each of which is a well-known species of *Mycobacterium.* Descriptions in the literature of various *Mycobacterium spp.* are usually so meager that it is not possible to classify them or to compare the report of one worker with that of another. In one inventory of *Mycobacterium spp.,* it was proposed to number the strains in the alphabetic order of the authors, since it was not possible to classify them on existing information. The list up to 1945 included 163 numbered strains.

Of particular interest is a recent study of 195 strains of *Mycobacterium spp.* collected from various laboratories. Many of the cultures had been given names, such as *Myco. phlei* and *Myco. butyricum.* Most were properly called *Mycobacterium spp.* When these organisms were subjected to a large number of tests, it was found that many of them were alike. Each of one group of 57, in which there were 15 different names, was found to be *Myco. smegmatis.* A total of 28 strains, including 18 isolated from patients, were identified as *Myco. fortuitum.* One of these had been called *Nocardia sp.* Thus, adequate examination of these microorganisms permitted proper classification instead of lumping them into such wastebasket categories as "paratubercle bacilli" or "atypical acid-fast bacteria."

The changes in names of bacteria continue to baffle physicians, to say nothing of the consternation aroused among bacteriologists. Each discipline of science has an organized plan for creating descriptive and useful nomenclature to meet its particular needs. Organic chemicals are named ac-

cording to rigid rules; botanists and zoologists are guided by authoritative codes of nomenclature. For bacteriology, an International Committee on Nomenclature exists that provides rules for assigning a microorganism to a genus and giving it a specific name. A scientific designation has universal validity if it is made according to rules. Every bacteriologist can recognize certain characteristics of a microorganism by its name alone.

Certain common names of microorganisms have usefulness, such as "pneumococci" for *Diplococcus pneumoniae* and "tubercle bacillus" for *Myco. tuberculosis.* Also, there is common scientific jargon, such as the chemists' "gunk" for amorphous unidentified stuff. The term "atypical acid-fast microorganism" should be recognized as useful jargon for informal discourse. However, the organisms included under *Mycobacterium spp.* are not atypical. Each species of *Mycobacterium* is typical of its own kind. Microorganisms should not be discarded into wastebasket categories just because they do not appear to be typical of allegedly more important kinds. A culture of *Mycobacterium sp.* isolated from sputum, exudates, lesions or any other source should be adequately studied and properly named. It should not be called "atypical" merely because it does not resemble *Myco. tuberculosis.*

Alfred G. Karlson, Ph.D.

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EDUCATIONAL TELEVISION

The Background

On May 11, 1953, the first non-commercial educational television station in the United States broadcast its first program. More than four years later KTCA-TV in Minneapolis-St. Paul, became the twenty-fifth such station in the country. Since that time six more such stations have come on the air and it is expected that in the next three years another twenty such stations will be started, including one at Duluth. These stations came into being as a result of a need expressed by many eminent citizens before the Federal Communications Commission in 1951 and 1952 which culminated in the FCC reserving VHF and UHF channels for non-commercial educational use in April, 1952.

The financial costs of establishing an Educational Television station have varied from a low of about $150,000 to a high of $900,000.00. The costs in terms of time and effort on the part of interested citizens in the places where such stations have been activated are, if anything, even greater. Annual costs for operating Educational Television stations vary from about $100,000.00 to $800,000.00 per year. Again much time and effort by many people must go into such a station operation.

In view of the costs listed above and the difficulties of television production generally, a reasonable man might well inquire as to the justification for for these activities and expenditures. What contribution can Educational Television make to the areas in which it operates which has caused these communities to invest so heavily in it?

One of the first and most compelling reasons for the establishment of these stations is contained in two of the most important facts of our time. The first is that in a short twelve years, by 1970, all classes from the kindergarten to the graduate school in this country will have, on an average, twice as many students as we have today. This is not theory. The freshman class in 1970 now averages six years of age. They are here. The children who will bulge our seventh grade classrooms in 1970 were born in 1957.

The second sobering fact is that there is no way in the world that we can double the number of qualified teachers in this short period of time.

Taken together, these facts mean that we must either extend the reach and scope of our teachers or we must resign ourselves to half-day schools, ill-qualified teachers, and in sum, to the negation of the American dream that all who are qualified to benefit from education should have an opportunity to receive it. Obviously, educational television has the ability to extend the teaching of the excellent, well-qualified teacher beyond the thirty or forty in the classroom to 30,000 or 40,000. In fact, in Pittsburgh, St. Louis, Houston, Birmingham, San Francisco and a score of other areas this has already been done. Potentially, the thirty or forty thousand who study Psychology in Houston by means of an ETV station and an exceptionally capable professor from the University of Houston could well be (and *may* be in the near future) 300,000 or 400,000.

Events of recent months have caused all of us to wonder if the quantity and quality of our education is sufficient in certain areas, notably the sciences. The kind and amount of science train-

ing in the elementary schools has come in for especial criticism. By means of KTCA-TV and a most capable young teacher, 20,000 elementary school children in Grades IV and V in St. Paul and Minneapolis schools are now simultaneously receiving instruction at a very high level in this subject area three times each week.

Questions as to the efficacy of this kind of instruction, as to its quality and its cost have been studied at length all over the United States. The answers to these questions are uniformly favorable to education by television and they will be discussed in succeeding articles.

JOHN C. SCHWARZWALDER

PARTNERSHIP WORKS

Electrical Industry

Partnership between investor-owned electric companies and local agencies in the development of water power resources has been a good thing for both the nation and the taxpayers in the Pacific Northwest.

In that area alone, the Federal Government stands to save a great portion of the three and a half billion dollars—approximately one million dollars a day—it will cost to meet the growing power demands of the region over the next ten years.

Self-reliant, investor-owned electric companies and local agencies are now building more than four million new kilowatts in this region alone, *The Reader's Digest* reported in August. "The local horse is far outstripping the federal horse in the Pacific Northwest as they go into the stretch," the *Digest* said.

In a recent letter to Congressman Jack Westland of Washington, President Eisenhower said:

"Early in my first term I expressed the belief that the nation must adhere to three fundamental policies: first, to develop, wisely use, and thus conserve our country's natural resources from generation to generation; second, to follow the historic pattern of permitting private and other non-federal organizations to develop these resources under fair provisions of law, including restraints for proper conservation; and, third, to treat resource development as a co-operative undertaking—a partnership in which the participation of private citizens and state and local governments is as necessary as federal participation.

"In other words, I believe the job to be done is so great that the Federal Government should build some projects, local governments some, and private interests some, and that there should be joint effort on still other projects. A number of projects in the Pacific Northwest, as well as in other parts of the nation, are being constructed in accordance with these policies."

"I am more convinced than ever that these policies are sound," the President concluded.

Speaking of the Hells Canyon development of the Idaho Power Company which was a long hoped-for plum of public power, the President said:

"Obviously the nation cannot and should not finance all water resource development with federal funds. The Idaho Power Company will permit the Federal Government to devote more of its financial resources to other developments which are clearly beyond the capabilities of non-federal interests alone."

DON UNDERWOOD

NEIGHBORHOOD BIRDS

The English Sparrow

In Minnesota, the English sparrow is an abundant permanent resident. Dr. Roberts, in The Birds of Minnesota, pinpoints June, 1875, as the date of their introduction into the state. The original birds were brought from New York and released in St. Paul. That they survived their first winter in Minnesota and bred successfully is evidenced by the fact that Dr. Roberts could note "a small flock in Minneapolis in October, 1876," and observed that they nested "about the cornices and under eaves of business blocks." It was first brought to North America through the efforts of the directors of the Brooklyn Institute in Brooklyn, New York, in the fall of 1850. Eight pairs of the English sparrow were kept in captivity during the winter and released in the spring of 1851. Evidently fearful that their first attempt was inadequate, these early sparrow enthusiasts released a second and larger flock in 1852. Records indicate that adjustment to the new environment was hard on the birds in spite of the care that was provided for them.

In the hope that the English sparrow would help in the control of the cankerworm and probably with some admixture of sentimentality, various groups made numerous importations into the New England states between 1854 and 1867. Between 1860 and 1866 several hundred pairs of birds were released in New York city parks; Galveston, Texas, saw a colony established in 1867; Philadelphia provided food and nesting boxes for a thousand English sparrows about 1869; Montreal and Otta-

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wa in Canada welcomed them in 1870; San Francisco added them to the avifauna of the West Coast in 1871-72; Utah put them on their bird list in 1873 or 1874; the first birds were brought to Jackson, Michigan, between 1874 and 1876; Iowa and Missouri imported several pairs as late as 1881 and 1883. Some of these later importations came from colonies already established in this country and others came directly from Europe. In all, it is known that the English sparrow was deliberately introduced into thirty-three of the states and Canada in about 100 different cities. Despite its name, the English sparrow is native, not merely to England, but to all of northern Europe and Asia. Moreover, it is technically not a sparrow but a weaver finch.

The status of the English sparrows by 1887 can be evaluated by the fact that in that year Michigan enacted a bounty law of one cent apiece in lots of twenty-five. Subsequently, the bounty was increased to two cents and birds could be presented in lots of ten. Bounty laws have been adopted in other states but seem to be ineffective and most of them have eventually been repealed. In 1912, Dr. Frank M. Chapman, Curator of Ornithology in the American Museum of Natural History, could write: "Its (the English sparrow's) harsh, insistent, incessant chirp is now the dominant bird voice about our homes, where we may never again hope to hear a chorus of native bird music unmarred by the discordant chatter of this alien." Though not everyone may react thus to its chirping, the fact remains that the English sparrow is with us in far greater numbers than most of us can appreciate.

Falling short of the insectivorous habits that were expected of it (it is 96 per cent a vegetarian) and usurping the niche of some of our very desirable native birds, the English sparrow with its pugnacious, quarrelsome ways has done little to endear itself to the land of its adoption. Its messy habits both in perching and in nesting have made it an unqualified nuisance. If we add to this its unsavory reputation for carrying diseases of poultry and other farm animals, the black marks against the English sparrow more than justify its place among the outlawed birds.

Mindful that "there is so much good in the worst of us and so much bad in the best of us," the writer cannot but reserve a soft spot for the saucy, pert little fellow and while plotting methods to outwit him yet finds delight in watching his ardent wooing and industrious gleaning of weed seeds in the lawns and gardens.

Sister St. Mark Wirtz, M.S.

THE PATIENT WITH ACUTE MYOCARDIAL INFARCTION

Rehabilitation

When the diagnosis of acute myocardial infarction is confirmed and the medical and nursing measures necessary for supporting the injured heart have been accomplished, the third phase of medical management becomes the responsibility of the attending physician. This phase might be labeled simply rehabilitation if we accept the implied inclusion of such items as medical observation during convalescence, management of residual coronary or myocardial insufficiency, guidance with respect to future occupational and recreational activity, and assisting the patient in his development of a sensible philosophical acceptance of his illness and its consequence.

Rehabilitation has its first application during the emergency care when the attending physician and his nursing staff may prevent severe and persistent psychic trauma by maintaining an optimistic attitude and avoiding whispered discussion among themselves and the patient's family. Early in the course of the illness, while the patient's apprehension is controlled with appropriate sedatives, is an acceptable time to acquaint the patient with the type of underlying disease which caused his attack. A frank discussion at that time will result in better understanding and co-operation with respect to treatment. The period of hospitalization should not be unduly prolonged in the absence of continued evidence for persisting severe coronary insufficiency or myocardial failure. The majority of patients will be relatively asymptomatic and objectively will have the usual continued resolution of electrocardiographic findings and a fall in erythrocyte sedimentation rate in two to three weeks. Then gradual ambulation should be permitted rather than insistence on a set time schedule of rest in bed based solely on a routine recorded in a textbook.

During hospitalization and later in the convalescent period, the physician's ear must be readily available to the patient and questions should be answered frankly and without evasion. Questions during this time help the patient to organize his post-infarction life. On leaving the sheltered existence of the hospital, the usual patient becomes

much aware of his chest and is upset by mild and vague sensations which he previously would have, and did, totally ignore. Patient willingness to listen and reassure with respect to meaningless discomfort as well as to detect evidence for recurrent coronary insufficiency is the physician's responsibility during the convalescent period.

Despite the fact that insurance benefits may well reduce the need for rapid rehabilitation, progressive increase in physical activity after ambulation is permitted and must be encouraged. Physical activity within the limits of the patient's cardiac reserve will do much to abort post-infarction weakness and painful shoulder disease. Theoretically, it may be a factor also in the encouragement of improved intercoronary collateral connections. During his two or three months of post-infarction convalescence, details such as continued removal of obese tissue by diet, postcibal rest periods, and sedative control of anxiety reactions must not be omitted. Specific prescriptions must continue to be individualized. Reduction of the dietary ingestion of fat is justifiable for all patients who have had myocardial infarction. For those with residual angina pectoris, a trial of a long-acting coronary vasodilating drug for a period is indicated as well as the prescription of nitroglycerin. Congestive heart failure must have appropriate dietary, cardiotonic and diuretic management. The continued utilization of anticoagulant drugs is especially indicated for those who have had repeated infarctions of the heart or have continued severe angina, or known thrombosing tendency.

In this third phase of management, the physician should conduct himself in such a manner that his patient is encouraged to resume a productive life within the limits of his tolerance and that his patient is satisfied and sure of himself at that level of activity.

MILTON W. ANDERSON, M.D.

THE TRAVEL AGENT

The doctor is using the services of the travel agent more and more these days for his tickets to conventions and his vacation trips. The convenience of the travel service is great and saves much time, as the doctor can just telephone his agent, give him his requirements, and the tickets are delivered to his office.

A travel agent is a professional person although there is no real formal training to become one. The American Society of Travel Agents has a training school, but for personnel who are already associated with a travel bureau, and the same is true of the classes offered by the airlines to travel agents.

The history of how travel bureaus came into being is an interesting one. An Englishman by the name of Thomas Cook started, away back in 1841, taking Sunday school groups to visit the large towns in England and then a few years later he organized groups to travel from England to the Continent. These trips became so popular that Thomas Cook established offices in various cities around the world.

American Express Company, started as Wells Fargo Company, became an express company in 1850. The Wells Fargo name is still used in Mexico City. The American Express Company branched out from an express company to a travel company and is now mostly owned by the Chase National Bank of New York. They have hundreds of offices in Europe, the United States, and the rest of the world.

Brownell Tours of Birmingham, Alabama, was started by Dr. W. A. Brownell July 4, 1887, with a group of ten for a tour of Europe, and they have been operators of escorted tours ever since.

As transportation developed, there was a decided need for more travel bureaus than these big companies. The steamship companies could not have offices in every large city, nor could the companies mentioned above. They needed local representatives, and at first the railroad agents or insurance companies represented them. But, these companies could not devote much of their time to give the service the travelers demanded, so the expert traveler began opening his own office in his home town, offering complete service and information.

At first, any person who wished to start a travel bureau could do so, but now a travel agent has to qualify. He has to be briefed and accepted by the Steamship Conferences, by the Railroad Travel Associations, and by the Air Travel Conferences. He also must first establish an office, and when he is accepted by the conferences, he pays a yearly fee. Then, to represent all the different carriers, he, in turn, must be accepted by each carrier and sign a contract with each carrier.

It is a difficult profession with many rules and regulations. To be successful as a travel agent, one must have knowledge of all transportation, all schedules and information about the places to

visit. Also, travel agents handle bookings in connection with bringing emigrants to this country and assist in making out the necessary affidavits, which are sent by their relatives here in this country.

Sometimes, a travel agent has to assume the responsibility of prescribing the right trip for health reasons for a client, so it is important to know the places well, also to know one's clients.

A traveler can find the travel agent most helpful. He can purchase his complete trip in one office. It is not necessary to go to one office for a rail ticket, another for a plane ticket, and still another for steampship transportation. A travel agent also represents most of the hotels throughout the world, and can make reservations at any hotel desired.

A traveler, if he is going to Europe, does have to obtain his own passport, but the requirements necessary to secure the passport are given to him by his travel agent.

Now, none of these services cost the traveler any additional amount, for the agent represents the companies and receives his commission from the carriers and hotels. The travel agent can save you time and money—and assemble the whole trip for you!

MARGUERITE DAVIS
Travel Agent

THE ROLE OF THE DOCTOR'S WIFE

"Protect Your Handsome Investment"

Most doctors' wives remember the careful budgeting to pay off the bills of Medical School. Some are in the throes of doing it while bringing up their families, so they know the money values involved. Those of us who have outlived that phase believe that we have a terrific investment in the labors that cannot be evaluated in terms of dollars on top of the original expense. We all want to know how we can make our husbands take as good care of themselves as they do of their patients. When we see older physicians making such definite contributions to their families and their communities, how can we make sure that our younger men will be given the full measure of their time to make a similar contribution?

Should we urge our husbands to take as many vacations as their purses, consciences and partners allow? How else can we give our husbands the needed relaxation after the hectic demanding days, when it is often difficult to keep them informed of what we have been doing and thinking.

I see no panacea or definite solution for our problem as long as there are ill people and our husbands are available. But there are many ways in which we can relieve tensions at home and encourage interests in various hobbies, though the fact remains that each day brings new crises in the medical legislation field. We can keep informed about these new pressures and I believe that that is where we as doctors' wives have a definite job to do. It will take much persuasion and study to equip ourselves to understand the forces which are undermining our whole economy and will change our whole way of life.

Perhaps we should go back and study the history of our country, the struggles of the early colonists, and how they accomplished more when they had freedom of activity, based on vitality and opportunity. Are we losing sight of the ideals that made America great? Freedom? Individual initiative? Are our schools teaching the fundamentals and enough science so that our medical schools will continue to have qualified applicants? What idealogies? These are only a few of the things we should be aware of in our communities.

Doctors and their wives hesitate to get into politics, but the time is here when we can no longer remain on the sidelines and not take issue against some of the forces. We must keep informed, as good citizens, and not fear to let our friends and neighbors know how we stand on some of the socialistic legislation that is being promoted at this time. We can all do a wonderful selling job for medicine if we can make the public realize that first-rate medical care cannot survive rules, regulations, controls and assembly line technique.

Our first job, therefore, is to be informed. We have a very able legislative chairman in the Medical Auxiliary who will alert members to any action on the state and national level. Our husbands receive notification from the Medical Society, too, but they do not always have the time to peruse all the mail they receive, so it is up to us to call it to their attention. We may be asked to write to our congressmen; this is important. We may even write our husbands' letters, but get it done.

This is a wonderful field of joint endeavor, for any legislation that affects our husbands also influences our lives. The time is long past when the practice of medicine can be carried on as it once was, and whether we like it or not, public health

is a political football which some forces would like to have under government control. Unless we do our share in trying to stem the tide, we have no one to blame but ourselves.

To protect our handsome investment, we must be informed, practice good public relations, and at home avoid burdening him with unnecessary family problems, try to find some form of relaxation for him, with or without the family as he desires, and stand up and be counted at election time or whenever we are alerted to action.

(Mrs. C. L.) Helen Oppegaard
Immediate Past President
Woman's Auxiliary, MSMA

The title for this editorial is taken from the *New Jersey Medical Auxiliary Journal.*

GROOMING PHYSICIANS FOR THE FUTURE

November first is an important date for members of the Minnesota State Medical Association. This date will mark the deadline for the acceptance of 1959 applications for the rural medical scholarship. Physicians of the state have the important task of perpetuating the profession in a growing state. Particularly important is the matter of providing physicians to rural Minnesota communities.

In 1951, the rural medical scholarship was established by the Minnesota State Medical Association for that purpose. Since that time six recipients have been awarded the scholarship.

The scholarship provides one thousand dollars each year for four years on the condition that the recipient agrees to practice medicine in a rural Minnesota community for at least five years after graduation from the University of Minnesota Medical School.

Members of the Minnesota State Medical Association are encouraged to make every effort to counsel young persons interested in medicine or related fields. Scholarships may create an awareness, but the encouragement of a dedicated man of medicine is more likely to be the determining factor which impels action.

Physician, is there a medical school freshman of your acquaintance eligible for the Rural Medical Scholarship? Encourage him to apply. Perhaps you may be giving the necessary spark to a Minnesota physician, vintage 1963.

PRINCIPLES CONCERNING PARAMEDICAL WORKERS IN RELATION TO MEDICINE

I

Medicine must re-establish its primacy, its overall responsibility and authority, in the realm of medical care.

II

Medicine should undertake to define the conditions under which any paramedical groups may or should be licensed. (Does the public interest require their licensure, or would licensure only lead to independent functioning which is not in the public interest?)

III

In the interest of a better co-ordinated professional service, medicine should determine and define the need for each paramedical group, its functions, its educational standards, and the manner in which its members (whether licensed or unlicensed) are to be recognized and supervised.

IV

Medicine should assert the principle that every physician has the legal right to do anything for the patient that his medical care requires, and that he further has the right to delegate to any paramedical worker any technical procedure.

V

Medicine should further assert the principle that whatever privileges may at any time be granted to limited practitioners or paramedical workers, whether by law or otherwise, such grant in no way circumscribes the physician's authority in that field and in no way restricts the practice of medicine by the physician.

VI

The medical profession as a whole should recognize the basic fact that whenever any paramedical group succeeds in establishing independent status in any area of professional medical practice, or in circumscribing or compromising the authority of the physician in any area of professional medical practice, the threat or the damage extends to all of medicine and should be of concern to the entire medical profession.

These principles were adopted as an official statement of the National Medical Foundation for Eye Care by its Board of Trustees, May 27, 1958. Additional copies are available from the Foundation at 250 West 57th Street, New York 19, N. Y.

President's Letter

OSTEOPATHY

Doctor: Would the health and welfare of the people of Minnesota be jeopardized if full rights of practice were granted the osteopaths?

How would you answer that?

At the onset, it should be emphasized that the osteopathic concept was indefinite at the start and recent investigations have shown that it still is. For evidence, note the statement which appears in an officially sponsored booklet, published in 1957 and called "The Osteopathic Profession and its Colleges." According to this statement,

> "The human body is self healing, its adequate functioning depends on its unimpaired structure, and an uninterrupted nerve and blood supply to tissues is indispensable to the normal functioning of all parts of the body."

The first school of osteopathy was chartered in 1892 and was given the privilege of granting an M.D. degree, but chose instead to grant the degree of D.O. By the turn of the century, there were a great number of schools of osteopathy, most of which were short lived. At the present time, there are six schools left: Philadelphia, Chicago, Des Moines, Kirkville (Missouri), Kansas City, and Los Angeles.

If one studies osteopathic literature, one finds that the "osteopathic concept" has not even yet been well defined. However, what definition there is is still approximately that of its founder, Albert Taylor Still, in 1874. There has been no advance, therefore, in osteopathy as such. All the advances which have been made, and about which we—and the legislature—have heard have been advances in medicine which have been adopted by the osteopathic schools and the individual osteopaths. This may be more precisely indicated by a study of the osteopathic literature. The *Journal of the American Osteopathic Association* is patterned after the *Journal of the American Medical Association;* the articles contained in the *Journal of the American Osteopathic Association* occasionally are osteopathic in content; that is, they have to do with skeletal and muscular strains, but even then they usually use medical texts as references. Most, however, are medical articles which are primarily review articles and use an almost exclusively medical bibliography. So, as stated before, there have been no advances in osteopathy, only advances in medicine adopted by osteopaths.

Now, if we should grant that medicine rather than osteopathy is taught in osteopathic schools, where are we then? One solution would be to convert osteopathic schools to medical schools. If the first school had chosen to grant the M.D. instead of the D.O. degree, this effort of osteopaths to practice medicine would have been solved long ago. Their schools would have been upgraded to Class A medical schools as the homeopathic schools were, and their graduates would have been practicing medicine. The advertising value of the D.O., however, interferes with such a process now.

Under present conditions, the welfare of the people of Minnesota does not allow the practice of medicine under two names. The older osteopaths are practicing manipulation. Almost no pharmacology was taught in their schools as late as 1935. The younger osteopaths are coming closer to medicine. However, it is obvious that medicine under two different names would lead to deterioration because of differences in standards and in regulatory agencies. Also, if medicine is practiced by one group other than medical men, what is to prevent other groups with other restricted backgrounds from claiming practice rights? And what then will happen to standards and regulations?

For these reasons, and others, the Minnesota State Medical Association is opposed to granting full medical and surgical practice rights to osteopaths.

Horatio R. Sweetser

President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

MINNESOTA HEALTH POLICIES HIT NEW HIGH

The number of Minnesotans covered by voluntary health insurance has reached a new high according to Health Insurance Institute reports.

A special survey has revealed that 78.3 per cent of the projected state population now have some form of insurance, as compared with 72 per cent of the nation's civilian population.

The survey, based on reports of insurance company programs and other health care plans listed these figures for Minnesota to support the announcement:

Hospital expense insurance—2,621,000 persons covered at the end of 1956 as compared with 2,468,000 at the end of 1957.

Surgical expense insurance—2,372,000 as compared with 2,232,000.

Medical expense insurance—1,620,000 as compared with 1,553,000.

GOVERNMENT PARTICIPATION IN MEDICINE ENLARGED BY CONGRESS

The second session of the 85th Congress adjourned on a weary note during the early hours of August 24, 1958.

A large number of health measures received congressional consideration during the two year session. Some were enacted, others will again be introduced in the 86th Congress which will convene January 7, 1959. Impact of legislation enacted in this session of congress will be felt by the entire medical profession.

During its second session, the 85th Congress:

Called upon President Eisenhower to summon a White House Conference on Aging in January, 1961, one effect of which will be to give the specialty of geriatrics another boost.

Directed U. S. Public Health Service to spend the unprecedented sum of $294.3 million on medical research, a large part of which will reduce operating losses of medical schools and thereby postpone the day when some of them may be closed by funds shortages.

Challenged the "right" of free choice of doctor and hospital, when the subjects are servicemen's dependents having their bills paid in whole or part by Medicare, and thus strengthened the position of labor- and consumer-sponsored plans which are continually fighting the same battle with organized medicine.

Took a good look at the question of medical care and hospitalization of veterans for non-service-connected conditions and left the impression that legislation to bring about an equitable solution will be introduced and pushed in the 86th Congress.

Turned down the Forand bill, which organized medicine resisted fiercely, but the way was left open for its reconsideration in 1959. Likewise it refused to enact the Keogh-Jenkins bill, notwithstanding skillful efforts of American Thrift Assembly and its affiliated professions, but the outlook for next year is bright.

Authorized three more years of Hill-Burton aid, totaling $630 million, for hospital construction.

Also three more years of medical research facilities construction, at $30 million a year.

FIVE VISITS TO THE DOCTOR YEARLY IS NATIONAL AVERAGE

The average citizen sees his doctor about five times during the year, reports the Health Insurance Institute, citing a report issued from the National Health Survey.

Most patients visit the doctor's office. Home calls by the doctor account for less than 10% of the visits.

Some of the early statistics available from the Public Health Survey, which covered the months of July through September, 1957, showed that city residents consult a physician more often than those living on farms or in rural areas. People on farms see a doctor at a rate of 3.6 visits per person per year, as compared with 4.5 for the rural non-farm population. In the cities, the rate of doctor visits per person per year was found to be 5.1.

Not all physicians' calls involve treatment. Survey figures revealed that two-thirds of all doctor visits call for diagnosis and treatment, with the remainder involving preventive care or other such services. While this percentage distribution applies throughout the United States, visits for gen-

eral check-ups are somewhat less frequent among the rural farm population. In August, 1957, 18 per cent of all the people in the country saw a doctor. This is the time of year, the Institute pointed out, when the rendering of medical services is probably at a seasonal low, due to fewer cases of common cold, bronchitis, pneumonia, and other respiratory infections.

The generally held belief that more female than male patients see a doctor was confirmed. National Health Survey data showed that physician visits by female patients amounted to 5.5 per person per year as against 3.9 among male patients. For both sexes, the number of calls increased with age, with the exception of children under five years of age, where frequency of visits was relatively high. Persons at ages five through fourteen had 3.4 visits per person per year, whereas those over age sixty-five averaged 6.8 visits per year.

By type of services, the 4.8 visits by the average person per pear is broken down as follows:

Type of Service	*Number of Visits*
Diagnosis and Treatment	3.3
General Check-up	0.5
Immunization	0.4
Pre-natal and post-natal care	0.2
All other	0.5

INTRODUCING THE AVERAGE FAMILY DOCTOR

The average family doctor today is a well-established physician in his forties who treats about twenty-six patients a day and spends more than eight hours a day on home and office calls.

In its monthly statistical bulletin, Progress in Health Services, the Health Information Foundation released preliminary findings from a survey made in co-operation with the University of Chicago's National Opinion Research Center.

The study was intended primarily to find out what the American public thinks and does about health and health facilities. Interviews were conducted in the summer of 1955 with some 2,400 persons (representing a cross-section of the country's adult population) and with almost 500 physicians named by these persons as their family doctors.

The physicians interviewed are representative of those to whom the U.S. public first turns for medical care or advice. About three-fourths of the family doctors surveyed by the N.O.R.C. were general practitioners, and almost all of them were in private practice. (By contrast, less than half of the total medical profession classifies itself as general practitioners, and about three-fourths of the profession is in private practice.)

These major survey findings were brought out in the report:

Most of the physicians in the sample were relatively young men. The largest group (over one-third) were in their forties, and doctors under 40 constituted an additional quarter of the total.

The average doctor interviewed spent about six hours a day on office calls and another two hours on house calls. Only one doctor in every fourteen made no house calls, and four out of five physicians were generally available for night and Sunday emergency calls.

About seven out of every eight family doctors were affiliated with one or more hospitals, and more than half of all physicians performed some free work in hospitals.

Commenting on the survey, George Bugbee, Foundation President, further pointed out that four out of five persons interviewed by the N.O.R.C. said they had a family physician to whom they turned regularly when they were sick. Most patients, furthermore, "reported a very good opinion of the abilities of their family physicians, reflecting a confidence that is certainly related to success in patient care."

RURAL FAMILY HEALTH CARE EXPENDITURES INCREASE

The average farm family greatly increased its spending for health care in the fifteen year period from 1941 to 1955.

According to a survey conducted jointly by the U. S. Department of Agriculture and the U. S. Bureau of the Census, the government survey indicated that farm families spent an average of $15 per person for medical care, while urban families spent $32 per family member.

In 1955, the individual spending level for farmers was $63, or nearly 80 per cent of the estimated $81 laid out by city dwellers.

During this period, farmers not only reduced the difference in health care spending between themselves and urbanites, they also boosted their own medical expenditures on the family level.

The government report states:

"Part of this increase in medical care expenditures is due to the change in price level. But when this is taken into account, a tripling in medical expenditures for members of farm families since 1935-36 and a doubling since 1941 remain."

The report further indicates that the average farm family spent $60 for medical care in 1941. In 1955, the sum was $235, which is the equivalent of $126 in 1941 when the change in price level is taken into account.

The study also disclosed that the average farm family is investing more money in voluntary health insurance to help protect itself against the cost of medical care.

The typical farm family spent $3 in 1941 for health insurance and $42 in 1955. This 1955 expenditure was the equivalent of $13 in terms of what a dollar would buy in 1941, but on this basis still represents an increase of 333%.

In 1955, the report stated, some 51 per cent of farm families had some form of health insurance. In addition, the survey showed that as farm incomes increased, the proportion of families protecting themselves with health insurance tended to rise.

Among farm families with incomes between $500 and $1,000 in 1955, some 27 per cent had health insurance, while 42 per cent of families with incomes between $1,000 and $1,500 were so protected. The top income bracket, $7,500 and over, found 69 per cent of the families protected by health insurance.

MEDICINE IS NEWS

The American public has a big appetite for science news—especially medical news. This is one of the findings of a monumental nationwide study, sponsored by the National Association of Science Writers and supported by the grant from the Rockefeller Foundation.

The study is entitled: "The Public Impact of Science in the Mass Media." It was conducted by the Survey Research Center, Institute for Social Research, University of Michigan.

The preface of the 250-page study, just released, points out that "The scientific journals of the world pour forth research papers at the rate of 20,000 a week. The science writer, as the middle man in the flow of communications, must select, condense and translate from this fantastic deluge of information those items he is to transmit to the lay audiences of the mass media. In economics terms, it is not supply but demand that is the problem in the transaction."

Much of the study, which deals with nine specific objectives, was concerned with medical news and the reading public.

The study revealed, for example:

Medical reading is more prevalent among women than men.

Medical reading increases with age, but there is a sudden drop in the group of sixty-five and over.

The West leads in the percentage who read all news of medicine, and the south and northeast trail.

The science consumer (the reader or TV viewer) retains a lot of what he reads and hears.

Medical stories center around the major diseases.

Information that can be applied to everyday life is largely of the medical type.

Almost one third of the newspaper audience want more science news, and almost one half want more medical news.

The science consumer prefers to receive science and general news via the written media.

Based on newspaper readers, only 41 per cent reported that they read all medicine and health news, 35 per cent said they read some, 13 per cent said they glanced at it, and only 10 per cent said they skipped over it.

LEGAL PROFESSION SURVEY PLANNED BY AMA

A survey among approximately 10,000 attorneys will be conducted this fall by the Law Department of the AMA to determine subjects of mutual interest to physicians and attorneys. Physicians and attorneys will be asked to respond to questions on interprofessional relations, medical professional liability, and expert medical testimony.

The need for such a study is evidenced by the fact that as high as 80 per cent of all cases tried today require medical testimony, and that 7 out of 10 personal injury cases are decided on medical rather than legal considerations. It is incumbent upon the medical profession to be aware of the problems of attorneys and the role of medicine in the judicial system. It is hoped that this information can be used to promote good working relations between physicians and attorneys.

New Code for Doctors and Lawyers

A new "National Interprofessional Code for Physicians and Attorneys" was approved by the AMA's House of Delegates at its Annual Meeting in San Francisco. The Code will serve as a suggested guide for physicians and attorneys in their inter-related practice in the areas covered by its provisions—subject to the principles of medical and legal ethics and the rules of law prescribed for their individual conduct.

The Code was formulated by a joint national medicolegal liaison committee made up of representatives appointed by the American Bar Association and the American Medical Assn. The three medical representatives include Doctors David B. Allman, Hugh Hussey and George Fister. Besides drawing up this new Code, the joint committee has considered such things as the encouragement of state and local medicolegal meetings, medical professional liability problems, medicolegal forms and the possibility of establishing medicolegal courses in law schools and medical schools.

The Code has been prepared in general terms to permit its adaptation in light of local conditions.

AMA PLANS GROUP PRACTICE ROSTER

The AMA's Council on Medical Service has been in the process of compiling information on group practices throughout the country and eventually plans to publish a directory of these groups. To date the Council has information on 989 such groups located in the United States, Hawaii and Canada. Verification sheets have been sent out to those groups already on file. Physicians who practice in groups of two or more—who have not received a check sheet—are invited to send the following information to the Council: group practice name, address, office building (indicate whether rented or owned), number of physicians, and the specialties represented.

CHAMPIONS OF MEDICAL LEGISLATION RETIRE

Two congressional proponents of health legislation are retiring after more than thirty years of laudable service. They are Representative Charles A. Wolverton (R., N.J.) and Representative Thomas Jenkins (R., Ohio).

Representative Wolverton, former member of the House Commerce Committee, was recently known for his chairmanship of hearings in 1953 into major disease problems. He will retire a veteran of thirty-two years of congressional activity.

Congressman Jenkins, known for his role in the sponsorship of the Jenkins-Keogh bill, will retire for reasons of health after thirty-four years of continuous service in Congress.

To these honored gentlemen, the Minnesota State Medical Association extends a sincere thank you and well wishes upon their retirement.

CENTRAL REPOSITORY FOR MEDICAL CREDENTIALS

A Central Repository for Medical Credentials is now available to doctors of the world. The American Medical Association has brought to the attention of its members such a program initiated by the World Health Association, July 1, 1958.

According to the American Medical Association, the project is worthy of consideration because frequently during war and national uprisings, medical records are often lost or destroyed. Because of this, many doctors are today unable to utilize their professional skills because of the loss or destruction of their original credentials and a lack of a protective service in which authenticated copies could be deposited. Therefore, the World Medical Association has undertaken a program to assure that the doctor will always be able to prove himself medically trained and fully accredited to practice medicine.

In the United States, the lifetime cost of the service on a one-payment basis to the newly graduated doctor is approximately $60.00. An actuarial schedule has been established for doctors in the various age groups. A ten-year service rate is also available.

Repository officials suggest that the credentials deposited include official medical school record, medical diploma, and specialist credentials. American doctors should *not* send their original credentials, but should send photostatic, microfilm, or notarized copies of their original credentials.

Requests for forms and additional information in regard to the Central Repository for Medical Credentials is available from the World Medical Association, 10 Columbus Circle, New York 19, New York.

History of Medicine in Minnesota

A MEDICAL HISTORY OF MEEKER COUNTY PRIOR TO 1900

HAROLD E. WILMOT, M.D.

Litchfield, Minnesota

(Continued from the July issue)

Dr. Kennedy evidently was married in Chicago in 1849 while in Rush Medical College. Miss Julia A. Rudisell was his first wife and bore him two children; one, Julia A., married Nimrod Barrick, and they lived on the original claim in Meeker county throughout their lives. Under this name several grandchildren and great-grandchildren are still actively contributing their share to Meeker county's economy.

The first Mrs. Kennedy died July 13, 1854. Her sister, Caroline, who had been housekeeper for the doctor at and after that time, and Dr. Kennedy were married July 2, 1860. Three sons were born to this union—Milford P., who farmed in Dakota, and Harry M. and Lewis H. who attended the University of Minnesota.

Dr. Kennedy died February 7, 1903, from Bright's disease and was buried with honors of the G.A.R. in Ripley cemetery. He was seventy-eight years, six months, and twenty-seven days of age.

This man had boundless energy, determination, and foresight as will be shown by a few quotations from local newspapers during the span of his greatest activity.

News Ledger, April 3, 1873—"We learn that Dr. Kennedy's team took a sudden bath in Cedar Lake a few days ago in which they remained for over an hour before they could be extricated."

Litchfield Ledger, October 23, 1873—"Dr. V. P. Kennedy was Secretary of the Meeker County Democratic Convention of 1873."

Litchfield Ledger, December 25, 1873—"A Cedar Mills news item bemoans the removal of Dr. Kennedy to Litchfield."

News Ledger, February 19, 1874—"Dr. V. P. Kennedy was elected President of the Meeker County Council Patrons of Husbandry (National organization with townships organized under a county council)."

News Ledger, October 15, 1874—"Dr. Kennedy left for the east on Monday last. His family have moved to Cedar Mills for the winter."

News Ledger, December 10, 1874—"Dr. Kennedy will go to Philadelphia after the holidays and attend medical lectures."

News Ledger, February 11, 1875—"Dr. Kennedy was registered at the Minnesota Headquarters, New York, a few days ago."

News Ledger, October 28, 1875—"People are advised not to vote for Dr. Kennedy for state Representative as he could not be spared from his legitimate business."

News Ledger, February 14, 1877—"A leg amputation was successfully done a week ago in Wright county by Dr. Kennedy."

News Ledger, July 25, 1878—"Dr. Kennedy became a "Greenback" candidate (Democratic—?) for State Senator. There was considerable criticism in this by the *Republican News Ledger* until election time, October 5th, of that year. Dr. Kennedy was defeated by the incumbent Charles E. Cutts of Forest City by only 33 votes. A recount was considered by both men but 'as gentlemen, both abandoned the idea.' "

Independent Review, September 4, 1880—"Dr. Kennedy resigned as committee member of the Republican county organization due to differences with the party, and it was accepted."

News Ledger, September 16, 1880—"After much viturperative discussion between Dr. Kennedy and Si Leavitt regarding hiring a school teacher, one letter published for Mr. Leavitt concludes as follows: 'You have the reputation of being a surgeon. Turn your professional knife upon yourself, to cut from your heart the rooted cancer of falsehood and treachery that has flourished there until it has outgrown and overtopped every honest principle of your being; your scalpel to scrape from your brain the corrosive barnacles of buffoonery, bombast and slander, so long the leading principles of your life, and it is barely possible you may then be received into the society of respectable people.' Laconia, New Hampshire, September 16, 1880. S. W. Leavitt."

News Ledger, September 23, 1880 (portions of Dr. Kennedy's reply)—

"An Adieu to Si Leavitt"

"Editor, *Ledger*: In your last issue appeared a communication all the way from New Hampshire characteristic of the man who penned it. For scurrility and low billingsgate he even outdid himself.

[Dr. Kennedy proves by letters from President Folwell and Dr. Hutchinson of the University of Minnesota that he was right in his argument.]

" 'Falous in Uno, Falous in Omnibus' if applied to Si Leavitt, would make him unworthy of belief in anything. . . . And it only remains now for him to make the same assertions in reference to President Folwell and Dr. Hutchinson and everybody else. I suppose that he would expect this community to believe it. Adieu, my little man in black, adieu. V. P. Kennedy.' "

Dr. Kennedy at this time was again running for State Senator against W. M. Campbell. The results were close and contested, but settled in the Minnesota Senate chambers February 15, 1881, that Campbell had won by sixteen votes.

News Ledger, April 1, 1880—"Dr. Kennedy is the president of the newly organized Litchfield Board of Trade."

About this time, Dr. S. L. Barr, who had a somewhat loose association with Dr. Kennedy left him to later establish himself at Glencoe, and we find this courtesy card in the *News Ledger* of November 24, 1881:

"Drs. Kennedy and Newlands
Physicians and Surgeons
Office: Dr. Kennedy's Old One—Marshall Ave.
V. P. Kennedy, M.D. George Newlands, M.D.
Night Calls at Office Promptly Attended To."

News Ledger, April 21, 1881—"Last Sunday Dr. Kennedy was thrown from his buggy and his shoulder was dislocated. Dr. Bissel was called and set same. Dr. Kennedy is again out now but suffers considerably from the accident."

News Ledger, February 23, 1882—"Dr. Kennedy is home again. He has been to Washington within the past month and had a squint at the assassin Guiteau."

Independent, December 2, 1884—"Dr. Kennedy arrived here for a short stay last Saturday. He was elected to the Dakota Council (Territorial) at the late election. His district comprises ten counties, and he managed to squeeze in with a majority of 7000 votes."

Independent, January 20, 1885—"Dr. Kennedy is in his element now. The Dakota Legislature is in session, and the Dr. has created a furor by announcing that he will introduce a bill for relocating the capitol.

"South Dakota has a clear majority in the Legislature and there will no doubt be some lively music over the matter."

Independent, April 28, 1885—"Dr. Kennedy subscribed $20.00 toward the G.A.R. hall. He is living in South Dakota, but has not lost all interest in Litchfield."

Independent, December 1, 1885—"Dr. Kennedy has been in town for a few days. He will start soon for Florida with his family to spend the winter."

Independent, May 28, 1886—"Dr. V. P. Kennedy and wife arrived in the city early last week and have moved into their residence east of the park. The doctor says he has come back to stay. Look out for a lively time in politics this fall."

Independent, July 13, 1886—"The crops on Dr. Kennedy's farm in Dakota was destroyed by hail last week but covered by insurance."

Independent, October 5, 1886—"Dr. Kennedy nominated in Republican convention for Meeker County, as candidate for State Senator. Defeated by O. H. Campbell. He was made chairman of the Republican county committee, however, for the ensuing year. Charles E. Cutts was a member of the same committee."

In April, 1889, we find him going to Amarillo, Texas, investing in land and returning to Litchfield in June. He returned to Amarillo in October, ostensibly to check on crops.

A note at about this time appeared in a column in an Idaho (sic Dakota—?) paper: "Brother V. P. Kennedy has been a member of the I.O.O.F. forty-four years, treasurer of same the twentieth time, city treasurer a number of years. He has been a pharmacist. Had his reverses at times, but had tended to business and his word is good as law."

News Ledger, March 29, 1887—"He refused to be a nominee for mayor."

Apparently from this time on he devoted little time to public service but was kept busy with his many outside interests and certainly appeared happy and contented in his late years.

Dr. Kennedy was a great Latin and Greek scholar and coached students, hence his long and verbose newspaper battle with Si Leavitt over the qualifications of a high school teacher. He could do anything with his hands and in his old age in Aberdeen, South Dakota, built a duplex doing most of the work himself. He was one of the most outstanding pioneers in the vicinity.

Dr. Russel Whiteman.—According to Dr. Rosenthal, Dr. Whiteman was born in Essex, New York, and died in Anoka, Minnesota, February 26, 1893. He graduated from the Union College, Philadelphia, in 1844 and came to Minnesota in 1857 (?) and settled on a farm in Meeker County. He moved to Anoka in 1864 where he practiced medicine.

He is listed by A. C. Smith as being one of the three first white settlers in Greenleaf township, one of the others being Dr. V. P. Kennedy, and they arrived in 1856. A son was born to him in 1857 and may have been the first male birth in Meeker county, a girl by name of Dougherty having been born in Meeker county in 1856 at or near Forest City.

Dr. George Weisel came to Meeker county probably in 1866, locating at Forest City. He was an allopath, and when the county seat moved to Litchfield in 1869 he also moved there. He helped develop a subdivision, and a street was named in his honor. He was the first practicing physician to settle in Litchfield.

He was married to Isabella E. Grenier apparently about the same year he came to Litchfield (1870).

He was a charter member of the Masonic Lodge organized in Forest City, Meeker county, May 18, 1867, and was a member of the Presbyterian faith.

He was listed as president of the Litchfield village council in 1873.

His last courtesy card was published in the *News Ledger* December 25, 1873. At that time a news item stated he was in Atlanta, Georgia, for the winter.

On June 11, 1874, he was stated to be practicing in Wisconsin.

News Ledger, August 10, 1876—(news item) "An infant child of Dr. G. W. and I. E. Weisel died of dysentery on Sunday, July 23rd, and was buried in Valley City, North Dakota, on the following Monday. She was a lovely babe of nineteen months. The doctor and his

estimable wife have the sympathies of all who know them. Dr.'s native home is Williamsport, Pennsylvania."

No further information seems available. Apparently he moved to Valley City, North Dakota.

Dr. Ernest Hildebrandt.—Within a few years of the time Dr. Kennedy returned from the Civil War, we find Dr. Ernest (or Ernst) Hildebrandt settling in Forest City in 1869.

Dr. Hildebrandt was a large strong man, blue-eyed, brown haired, well dressed, six feet tall and weighing about 200 pounds, and wearing a goatee beard. He was possessed of a strong German accent and stated that he had been "once or twice in the army" and was "familiar with gunshot wounds." He drove a single horse and buggy chiefly in making his calls and was liked and respected by all who knew him.

He was born in Germany, November 5, 1829. He had been educated in Germany at the University of Jena, 1849, and had practiced in Erfurt, Germany, previous to 1868. He came overseas in a sailing ship in that year and located in Watertown, Minnesota, remaining there until about 1870. He arrived in Forest City, Meeker county, according to his own statement in 1869. He was listed in the Minnesota Medical Directory of 1890 in Forest City and legally authorized to practice under the "Years of Practice Act." The transactions of the Minnesota Medical Society reveal him "Licensed by Exemption" No. 845, March 27, 1884, with his address listed as Forest City.

He was described by one of the early settlers of that community as a "pill doctor"; he probably did not conduct as many surgical procedures as some of his competitors. He had his office in the home and a library of his own. He was friendly and kindly, a member of the Lutheran church, and interested in reading and music. His military record is unobtainable, but it is reasonable to assume that it took place in Germany with none in the United States forces.

He was married to Emily Louise Conrad who was born in Germany, February 24, 1830. The marriage date is not known. Eight children were born of this union, and it would seem all arrived before his coming to Forest City. They are: Odelia (Mrs. Jake Burfenning), who had two children, Forest City, Minnesota; Minnie (Mrs. P. Schafer), five children, St. Paul, Minnesota; Anna (Mrs. Henry Lawson), two children, St. Paul, Minnesota; Lena (Mrs. Henry Lenbard), Darwin, Minnesota; Mary (Mrs. C. J. Johnson), one child Louisa (Edwards), Watkins, Minnesota; William, a miller, Forest City, Minnesota, three girls; Robert, a mechanic, two boys and one girl, St. Paul, Minnesota; Max, a mechanic, three boys and one girl, Minneapolis, Minnesota.

All of his children are dead, but many grandchildren and great-grandchildren are living. A grand nephew, Walter, has been a student at the University of Minnesota School of Medicine.

Mrs. Hildebrandt died April 4, 1898, and was buried in Forest City, Meeker county, cemetery. Dr. Hildebrandt died in Forest City on March 17, 1913, of cerebral hemorrhage, and is buried at Forest City.

He and his brother conducted a grist and flour mill at Kingston for some time on their early arrival, but evidently he sold to his brother; though his son later took over a flour mill at Forest City.

His testimony as a medical witness in a murder trial which took place in Forest City in 1873 and whose principals were neighbors was clear and logical, particularly

as to entrance and exit of the bullet, and did much to assist the court in meting out justice. The violence resulted from a dispute over land.

The early records show Dr. Hildebrandt's son, William, as county coroner.

The doctor was practicing medicine actively in 1887, 1897, and 1898, as his signature is found on official records in the Meeker county courthouse.

The *Independent* of August 30, 1884, has this to say in a Forest City news column:

"Dr. Hildebrandt has been visiting the Cities the past few days in a professional way. From the teams which we see hitched in front of the doctor's office every day, we should judge that he had a rushing practice."

Independent, January 13, 1885—"Dr. Hildebrandt seems to be on the road much of the time during the severe weather we have been having."

Independent, January 27, 1885—"Dr. Hildebrandt's young folks were down visiting their friends near Darwin last week."

Independent, February 3, 1885—"Dr. Hildebrandt started for the Cities one day this week. He expects to be absent until some time next week."

Independent, October 5, 1886—"William Hildebrandt (son) is a Republican delegate from Forest City to the Meeker County Republican committee."

Word of mouth and history available gives us the over-all picture of a kindly, hard-working physician who gave the pioneers ever-ready services for their needs and left a fine group of progeny to carry on life's duties.

Dr. Frank Elmore Bissell (or Bissel) was a regular physician who located in Litchfield in 1871. He was born in Hartford, Wisconsin, December 27, 1845, being the first male child born in Washington county of that state. His parents were Cyrus and Amanda (Case) Bissel, natives of Connecticut, and came to Washington County, Wisconsin, among the earliest settlers of that region. They were farmers, but the doctor entered a drug store at an early age and remained in the druggist's employ for five years.

When eighteen, he enlisted in the U. S. Navy, served on a U. S. gunboat on the Mississippi River, and was in a number of minor engagements. His work was surgeon's steward. He was mustered out July 9, 1865; the doctor then went to Cleveland, Ohio, and that winter entered the Charity Hospital College, from which he graduated in the spring of 1869. He first began practice in Clinton Junction, Wisconsin, but moved to Litchfield in 1871. In the spring of 1878 he moved to Cold Spring, Minnesota, and was elected to the state legislature from that county (Stearns) the same autumn; and upon finishing his term in the spring, he returned to Litchfield and remained. He had operated a drug store in Cold Spring.

January 19, 1875, Dr. Bissell was married to Miss Addie F. Simons of New York. Two children, Emily S. and Frank S., arrived November, 1875, and October, 1878, respectively. The family were prominent Episcopalians, and the doctor was active in civic affairs, state politics, and the G.A.R. He was elected to the village council in 1880 and as mayor in 1886. He was a member of the Minnesota State Medical Association and president of the pension examining board. He was a charter member and officer of E. Branham post of the G.A.R. and a charter member of Frank Daggett post 35 of the G.A.R., as well as commander for one year. He was a surgeon of this latter post for years; he was medical director of Minnesota Department, G.A.R., two years; he was a member of Golden Fleece Lodge 89 A.F. & A.M. and of Robboni Chapter 37 R.A.M.

Dr. Bissell also served as village health officer for seventeen years and was president of the Crow River Medical Society. He was president of the Meeker County Republican committee in 1880.

Mrs. Bissell was also very active in social circles, serving as Worthy Matron of Fidelity O.E.S. and Grand Matron. She also was president of the Department of Minnesota W.R.C.

News items of then current files disclose many angles of interest:

News Ledger, June 4, 1872—"Dr. Bissel's bid to furnish medical attendance on the county poor was accepted and the county auditor was instructed to make a written contract with him at rates mentioned in his bid. Satisfactory bonds to be furnished and the board to reserve the right to annul the contract for incompetency or other proper cause. (The doctor sued for his fee, won, and the case was appealed and denied.)"

News Ledger, December 18, 1873—"Dr. Bissel of this village and Dr. V. P. Kennedy have put their heads together and are now doctoring the sick in partnership. Dr. Kennedy is an old resident of this county and skilled physician, and he and Dr. Bissell will have all the practice they can wish for."

News Ledger, January 19, 1875—"Dr. F. E. Bissell and Miss Addie F. Simons were married at Trinity Episcopal Church, the first public wedding in the new church. The Rev. T. G. Crump officiated."

News Ledger, December 9, 1881—"Dr. Bissell is visiting schools today and tomorrow to give smallpox vaccinations."

News Ledger, January 19, 1881—"Dr. Bissel operated strangulated hernia. Dr. Stuart assisted him.

"Drs. Bissel, Barr, and Newlands operated on a boy for skull fracture in the Litchfield House. He died six hours later."

News Ledger, August 23, 1884—"Drs. Bissel, Chapman, and Laughton held a post mortem examination in the case of Mrs. Asher and found, as Dr. Bissel had previously said, that she died of cancer of the stomach."

Among other news items are some to the effect that he captained one team of a hunting contest in 1883. (His team was defeated.)

Independent, March 4, 1885—"Dr. Bissel and Dr. McCollum of Dassel extracted a cap from a finger which had been present twelve years. In the operation a new anesthetic was used, applied locally."

Independent, June 4, 1889—"Two runaways of Dr. Bissell's team this week. The second time they ran into Lake Ripley."

News Ledger, February 4, 1886—"On his return from Darwin last night, where he had been called to suture an artery in a leg, Dr. Bissel had quite a cold experience. He got a mile or two this side of Darwin when, in the blinding snow, the horses wandered from the road, and for over three hours the doctor drove around over the prairie before he was able to find the road. During that time he was tipped out into the snow four times, and one of the times his team very nearly got away from him. With the mercury down among the thirties (below), the wind blowing a gale, and the snow flying in blinding clouds, such an experience would be no pleasant joke for any man. When the doctor finally reached home, he was thoroughly numbed and almost speechless from cold."

Dr. Bissell was entered on the Office Register of Physicians with License No. 565, dated January 26, 1884.

News Ledger, August, 1901—"**Dr. Bissell Appointed.**

"Dr. Bissell was last Tuesday appointed surgeon by the trustees of the Soldiers' Home in Minnehaha to succeed Dr. O. S. Pine who has held the position for several years. The doctor will assume charge about September 1st and later will be joined by his family. Dr. Bissell is a man of many years experience in the medical line, and he will no doubt fill this important place to the satisfaction of all. He is an old soldier and a member of the post of this place. He is receiving congratulations from all sides."

This is the last news item available.

One of our present older settlers tells me that Dr. Bissel died "some place away." He believes that he was married a second time but states that inasmuch as Dr. Bissel had an invalid brother, O. A. Bissel, living with him, this brother may have married Mrs. Collier, a widow.

He further states that the doctor was a large, round faced man, with a handle-bar moustache and dark hair. He was pleasant, a good mixer, and a very conscientious and hard worker. His picture in the local G.A.R. Hall discloses those features.

Dr. J. S. Bell, a homeopath, was one of the early physicians, arriving in Litchfield probably in May or June of 1872. His courtesy card first appeared in the *News Ledger* of that year on July 11, and reads as follows: "Dr. J. S. Bell—Surgeon and Homeopathic Physician."

News Ledger, July 11, 1872—"Excursion train wreck at Howard Lake coming from Minneapolis June 10, 1872. Dr. Bell of this village was one of those who escaped unhurt and he set himself at work immediately to aid those who were injured."

News Ledger, July 2, 1872—"Col. Hancock in behalf of the St. Paul and Pacific Railroad settled the doctor's bills occasioned by the late accident."

I have no further direct information, but, thanks to Dr. Rosenthal of St. Paul and Mrs. Guthrey of Rochester, we learn that Dr. Bell came to Rochester in September of 1871. Mrs. Guthrey quotes the history of Homeopathy of 1880. "Dr. J. S. Bell went to Rochester in 1869; went to Litchfield in 1873." Mrs. Guthrey points out that this is incorrect. She also quotes the *Rochester Post,* December 27, 1873, as to his departure from Litchfield. The item states that "Dr. J. S. Bell, formerly of Rochester, more recently of Litchfield, was in Rochester during the week. The doctor is seeking a more satisfactory and congenial climate."

His last courtesy card appeared in the *Litchfield News Ledger* December 25, 1873.

Dr. Samuel Barr had a courtesy card in the *News Ledger* of October 18, 1876, as previously noted. Apparently, he arrived at about this time and did cooperate with the other physicians to a considerable degree, assisting with operations. He did have letters printed in the newspapers in an independent manner to establish his talents and charges before the public as previously noted.

I will quote a few further items from the newspapers:

News Ledger, June 19, 1879—"Married: Dr. S. L. Barr to Miss Ada Benjamin of Iowa."

News Ledger, February 26, 1880—"The Deaf to Hear."

"If I cannot make the deafest man in Meeker county hear without the use of an ear trumpet, or shouting loud enough to wake the dead, it will be for the reason that the nerve of hearing is dead. Come and try it. Dr. S. L. Barr—Over Post Office"

News Ledger, April 14, 1881—"Dr. S. L. Barr ordered all children vaccinated."

News Ledger, September 15, 1881—"Samuel L. Barr, M.D., of Philadelphia, Pennsylvania, is now in Litchfield to remain indefinitely. He has made a specialty of women's diseases besides those of eye and ear, and in fact, of every disease the human system is heir to and has been successful in his treatment, as thousands are willing to testify. Office over Brill's drug store."

New Ledger, March 22, 1883—(news item). "Dr. Barr's professional card appeared in the *Minneapolis Tribune* of last week. Glad to see Doc come to the front."

Dr. Barr's last professional card appears in the *News Ledger* of May 31, 1883. He evidently moved to Minneapolis.

Dr. Rosenthal states that there was no professional record in Minnesota Medical Association files of his having been licensed. He may have procured a license elsewhere or may not.

(To be continued in the January issue.)

According to the Health Insurance Council's twelfth annual survey, voluntary health care programs furnished Americans and their families more adequate coverage to help pay the costs of hospital and medical care in 1957 than in any previous year. To emphasize this point, the report shows that during 1957, total health care payments increased 16.7 per cent over 1956, as compared to an increase of only 4.7 per cent in the number of people with health care coverage.

At the end of 1957, approximately 121,432,000 Americans had some form of coverage to help pay hospital bills, 108,931,000 persons had coverage to help pay surgical expenses, and 71,813,000 had coverage to help pay regular medical care costs. These figures include persons covered not only by Blue Shield and Blue Cross Plans, but also those covered by insurance companies and independent plans, such as industrial and community plans.

During 1957, the number of persons with regular medical care coverage increased 10.7 per cent over 1956, whereas the number of people with surgical coverage increased 7.5 per cent over the previous year. Percentage-wise, the smallest increase was in the number of people with hospital expense coverage, 4.7 per cent.

Also noted in the survey is the fact that during 1957, a total of 4.2 billion dollars was paid to or on behalf of persons protected under health insurance programs.

Payments to hospitals for care of Blue Cross subscribers nationwide exceeded the 1.2 billion dollar mark during the calendar year of 1957, an increase of 170 million dollars over the preceding year.*

In Minnesota, Blue Cross payments for hospital care incurred by subscribers exceeded 28.6 millions of dollars during 1957, compared to 23.5 millions of care dollars expended during the preceding year.

The first seven months' experience of 1958 indicates further increases in Minnesota Blue Cross dollars expended for hospital care. Over 19.6 millions of dollars have been paid to hospitals during this period for care incurred by Minnesota Blue Cross subscribers. Based upon the resultant average per month for experience, Blue Cross payments for hospital care will approximate $34,000,000 during 1958.

These overall increases are due to three factors:

1. Minnesota Blue Cross subscribers are continually availing themselves of higher levels of coverage.
2. Increased hospital facilities and cost of living increases result in higher hospital costs per day.
3. Increased usage of Blue Cross benefits by participant subscribers.

Increased usage of Blue Cross benefits by Minnesota participant subscribers has been of continued significance in recent months. During the first seven months of 1958, 513 cases have been paid per year per 1,000 contracts protected, an increase of 5.6 per cent over the similar period of the preceding year.

The frequency of subscribers receiving hospital care because of accidental injuries and poisonings accounts for 28 per cent of this increase in usage. Respiratory illnesses represent 24 per cent and digestive diseases 20 per cent.

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*Source E.P.B.R. Research Report 312. —13 and 312. —17
Summary of Blue Cross Financial Reports
$1,210,591,526—Year 1957
$1,040,471,634—Year 1956

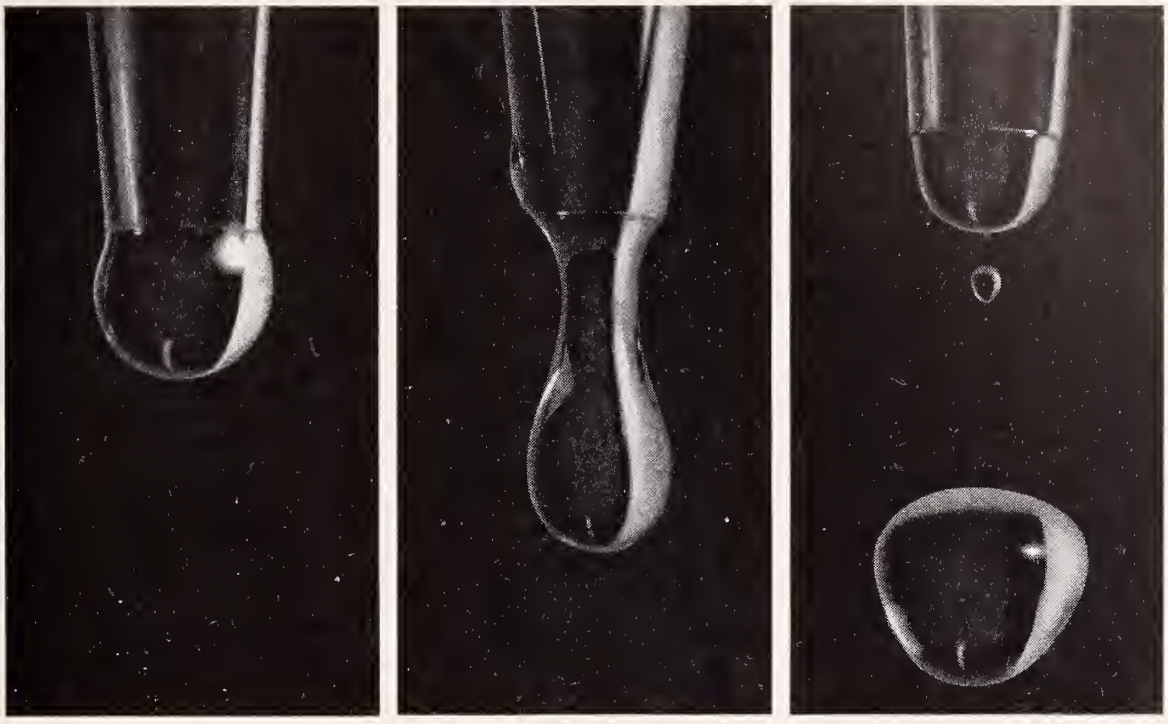
SPANISH-AMERICAN WAR VETERANS ADVISED

Physicians and hospital administrators should not assume that Veterans Administration can pay bills for care of Spanish-American War Veterans in non-VA hospitals, the agency has cautioned.

Since few Spanish-American War veterans have disabilities that are service-connected for purposes of hospital treatment, the number eligible for care in non-VA hospitals at VA expense is extremely limited.

A substantial number of veterans of this war have entered private hospitals under the assumption that their care would be at VA expense and later have found they are not eligible for this benefit.

If hospitalization at VA expense is requested, the nearest VA office should be contacted.



In Biliary Distress

ZANCHOL®

Improves Flow and Color of Bile

Zanchol (brand of florantyrone), a distinct chemical entity unrelated to the bile salts, provides the medical profession with a new and potent hydrocholeretic for treating disorders of the biliary tract.

The high degree of therapeutic activity of this new compound and its negligible side reactions yield distinct clinical advantages.

- Zanchol produces a bile low in sediment.
- Zanchol enhances the abstergent quality of bile.
- Zanchol produces a deep, brilliant green bile, regardless of its original color, suggesting improved hepatic function.
- Zanchol improves the flow and quantity of bile without increasing total bile solids.

Bile with these qualities minimizes biliary stasis, reduces sediment and debris in the bile ducts and discourages the ascent of infection.

For these reasons ZANCHOL has shown itself to be a highly valuable agent in chronic cholecystitis, cholangitis and care of patients following cholecystectomy.

Administration: One tablet three or four times a day. Zanchol is supplied in tablets of 250 mg. each. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

Committee Action

COMMITTEE ON HOSPITALS AND MEDICAL EDUCATION

The following is an abridgement of the report submitted to the Council and to the House of Delegates of the Minnesota State Medical Association at the annual meeting of the Association, May 22 to 24, 1958.

Hospital Construction in Minnesota

The committee noted with pleasure the report of the Minnesota Department of Health indicating that during 1957 four new hospitals in the state were completed while sixteen were under construction, that nineteen hospitals had completed building programs resulting in additional or improved facilities while similar building programs were under way in nineteen others, and that public health centers were under construction in both St. Paul and Minneapolis. Twenty of the programs were accomplished with the assistance of the Hill-Burton program, the remainder without such assistance. Altogether, 2,270 new hospital beds will be provided by these projects when completed, including 2,164 general hospital beds, sixty-two psychiatric hospital beds, and forty-four chronic hospital beds.

Attention should be called to the fact that although Minnesota has received slightly more than $22 million in Hill-Burton funds since the program started in 1948, the total estimated volume of construction completed, now under way, or in the planing stage, approximates $300 million in the field of hospitals and related facilities.

Medical Students

In June, 1957, 110 students were and in June, 1958, 113 students will be awarded the Doctor of Medicine degree by the University of Minnesota. The number of students admitted to the Medical School in September, 1957, was 129. In September, 1958, 140 students will be admitted, and 150 will be admited in September, 1959.

Graduate Medical Training

The State of Minnesota continues to occupy a leading place nationally and internationally in graduate training in medicine, almost all of which is carried out under the Graduate School of the University. During the 1957-58 academic year, 1,003 graduate students were enrolled in the basic medical sciences and the clinical specialties of medicine. This figure includes 513 graduate students enrolled in the Mayo Foundation program in Rochester and 419 enrolled in the Medical School program in Minneapolis which utilizes for graduate training in the clinical fields, not only the University of Minnesota Hospitals, but also Minneapolis General Hospital, Minneapolis Veterans Administration Hospital, Ancker Hospital in St. Paul, the Gillette State Hospital, and several private hospitals in the Twin Cities. The demand for graduate training in various specialties of medical practice is somewhat less than a few years ago, but the reputations of the University of Minnesota Medical School and the Mayo Foundation attract large numbers of applicants in most areas. Vacancies, however, continue in most of the basic medical sciences as well as in psychiatry, rehabilitation, and anesthesiology.

Continuation Medical Education

The Department of Continuation Medical Education, which presents each year a series of continuation courses for physicians, continues to provide the practicing physicians of Minnesota with an opportunity to review significant fundamental material and to learn of important advances in medical practice. The unique facilities of the Center for Continuation Study provide an atmosphere especially conducive to learning.

During the 1956-57 academic year, 1,246 physicians attended twenty-one courses at the Center for Continuation Study. All but six of these courses were intended primarily for physicians engaged in general practice. During the 1957-58 academic year, 1,414 courses, fourteen of them primarily for general physicians, have been or will be presented. Preliminary figures indicate that attendance during the current academic year will surpass that of last year. Since the fall of 1956, in addition to courses presented at the Center, Regional Seminars for physicians have been presented in Alexandria, Marshall, Fairmont, Detroit Lakes, Olivia-Redwood Falls, and Hibbing by the University in conjunction with the Minnesota State Medical Association and local medical groups.

The Department of Continuation Medical Education also is responsible for the planning and presentation of continuation courses for nurses, medical technologists, and dietitians. These programs continue to be well received.

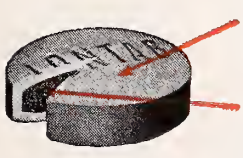
(Continued on Page A-56)

X-RAYS SHOW HOW ONE PYRIBENZAMINE® LONTAB®

relieves allergy all day or all night

The unretouched X-ray films show how Lontabs release medication in the digestive tract. So that the prolonged erosion of the Lontab core could be visualized by X-ray, subject was given 10 Lontabs, each containing 100 mg. of a radiopaque substance in place of Pyribenzamine.

With its unique formulation, the Pyribenzamine Lontab not only relieves allergy symptoms promptly, but sustains relief as long as 12 hours.



Special outer shell releases 33 mg. Pyribenzamine hydrochloride within 10 minutes.

Unique core releases approximately 18 mg. Pyribenzamine hydrochloride the 1st hour, approximately 50 mg. from the 2nd to the 12th hour.

SUPPLIED: Pyribenzamine *Lontabs* — full-strength — 100 mg. (light blue).

NOW AVAILABLE: Pyribenzamine *Lontabs* — half-strength — 50 mg. (light green) — for children over 5 and for adults who require less antiallergic medication.

PYRIBENZAMINE® hydrochloride (tripelennamine hydrochloride CIBA)
LONTABS® (long-acting tablets CIBA)

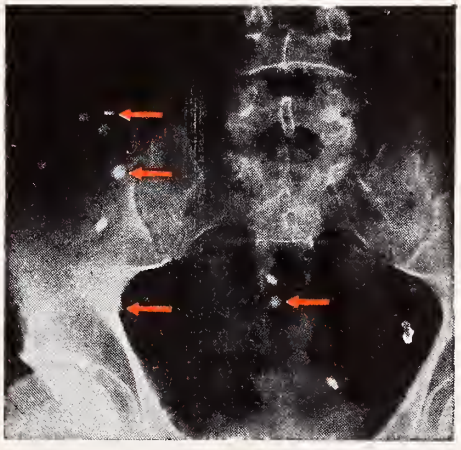
2/2562MK

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2 hours Lontabs are in the stomach and small bowel. Release of core substance is well under way.



4 hours Lontabs are in the ileum and cecum as core has steadily eroded.



8 hours Lontabs are still visible as substance of core continues to be released.



(Continued from Page A-54)

Nursing

The provision of adequate nursing service remains a difficult problem in certain areas of the state, particularly those in which new hospitals have been constructed or existing hospitals expanded. Minnesota, however, is distinctly above the national average in the number of nurses per 100,000 population. A survey showed that 11,586 professional nurses were actively engaged in nursing in Minnesota during 1957. Of these 8,407 were employed in hospitals and similar institutions.

Eight of Minnesota's twenty-nine schools of nursing have four-year degree programs. Although Minnesota ranks nineteenth in population, only seven states have more nursing students. More nurses are graduated by Minnesota schools than by the nursing schools of any of the neighboring states.

Practical nursing training is carried chiefly by vocational education departments of school systems in conjunction with local hospitals. On January 1, 1958, Minnesota had fifteen schools of practical nursing and six additional schools are expected to open during the year. A new development in Minnesota is the preparation of non-professional nursing personnel for the care of psychiatric patients.

Education for advanced professional nursing —administrative, teaching, supervisory, and public health nursing—is centered in the University of Minnesota which trains more teachers of nursing than any other institution in the country.

Rural community nursing is a part of the basic educational program of many schools of nursing in Minnesota. Experience for students is provided through affiliation with community hospitals outside the metropolitan areas of the state. Schools of nursing in Minneapolis, St. Paul, and Duluth assign students to community hospitals in Bemidji, Benson, Fairmont, Grand Rapids, Hibbing, Litchfield, Pipestone, Sauk Centre, Sleepy Eye, Stillwater, Thief River Falls, and Worthington. The University of Minnesota provides the direction and co-ordination of this program.

Special educational nursing services in the state include extension classes, workshops, and institutes. Since 1951, the Minnesota State Student Nurse Scholarship Act has provided more than 1,600 scholarships.

Medical Technology

Although in the past few years the number of students completing requirements for the four-year degree program in Medical Technology has

(Continued on Page A-58)





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with ample amounts of vitamins—B_1, B_6, B_{12}.

strengthen bodies with needed protein
Through the action of l-Lysine, cereal and other low-grade protein foods are up-graded to maximum growth potential.

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with iron in the well-tolerated form of ferric pyrophosphate...plus sorbitol for enhanced absorption of both iron and B_{12}.

new

INCREMIN* WITH IRON SYRUP

Lysine-Vitamins

delicious cherry flavor— no unpleasant aftertaste

Average dosage is 1 teaspoonful daily. Available in bottles of 4 and 16 fl. oz.

Each teaspoonful (5 cc.) contains:

l-Lysine HCl	300 mg.
Vitamin B_{12} Crystalline	25 mcgm.
Thiamine HCl (B_1)	10 mg.
Pyridoxine HCl (B_6)	5 mg.
Ferric Pyrophosphate (Soluble)	250 mg.
Iron (as Ferric Pyrophosphate)	30 mg.
Sorbitol	3.5 Gm.

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(Continued from Page A-56)

been below normal, the present indication of slight increases in the number of students in this program is encouraging.

The increasing need in the state for the services of the professional graduate Medical Technologist serves to emphasize the present critical shortage of laboratory personnel. Continued and vigorous efforts toward recruitment of students are urgently recommended.

Laboratory Aide Program

During the past year, the Laboratory Aide Program has been expanded by the inclusion of five additional hospitals outside the Twin Cities area for clinical training of students. Newly participating hospitals include St. Francis Hospital, Crookston; Fairmont Community Hospital; Lake Region Hospital, Fergus Falls; St. Francis Hospital, Breckenridge; and Veterans Administration Hospital, Minneapolis.

General awareness of the Laboratory Aide Program appears to be increasing, and enrollment in it may be expected to rise. Future expansion of the program should be contemplated if necessary financial support is available.

HAROLD S. DIEHL, *Chairman*

COMMITTEE ON OPHTHALMOLOGY

During the year 1957, the Committee on Ophthalmology, under the chairmanship of Dr. T. R. Fritschc, sponsored an educational exhibit at the 1957 state meeting stressing the importance of proper eye care for children and attempting to impress the general practitioner with the following information:

1. An alert nurse-parent-teacher combination and use of the Snellen Chart are all that is necessary to do an excellent job of visual screening of school children. Elaborate instruments are too complicated for young children, resulting in too many false positive cases and thereby in unnecessary glasses—if these cases fall into unscrupulous hands.
2. Early examination of children in which there is a family history of strabismus, amblyopia (poor vision), strong lenses, cataract, or other eye diseases.
3. Strabismus is best dealt with as soon as discovered.
4. The ultimate goal is pre-school examination of four year olds, as visual improvement of amblyopia is seldom successful after age five.
5. Early referral of infants with tearing, photophobia, discharge, or other abnormalities.
6. Cycloplegic examination is the only reliable way to examine infants and children for refractive errors.

The committee has frequently been informed of attempts on the part of optometrists in the state to take over the visual screening of school children in place of the designated specially-trained school nurses in certain communities. This has been true especially in areas with a shortage of school nurse personnel.

There have been an increasing number of optometrists who have found their way to membership on school boards, and into officer positions in the parent-teacher organizations. From there, it has been possible for them to promote optometrist-testing programs, and thus prescribe glasses and carry on so-called visual training programs. The committee wishes to call attention to the entire adequacy of the public health nurse system in finding school children who need visual care. It is to be hoped that they will receive the enthusiastic support of the medical profession.

The committee also condemned the matter of optometrist's giving psychological treatments to mentally retarded children in several communities.

In the forthcoming year, the committee is investigating the possibilities of promoting the testing of pre-school children in the endeavor to detect ocular defects which may be better treated in the years prior to their beginning school.

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Capsules / Oral Suspension

designed for effective control of common gram-positive infections

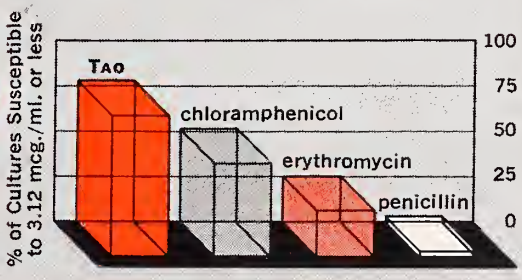
effective . . .

CLINICAL RESULTS	adults	children	all Staph infections
Cured	172 (80%)	148 (89%)	71 (88%)
Improved	28 (13%)	8 (5%)	7 (9%)
Failure	17 (7%)	11 (6%)	3 (3%)

Types of infecting organisms: The majority of identified etiologic microorganisms were Staph. aureus and Staph. albus. Tao has its greatest usefulness against organisms such as: staphylococci (including strains resistant to other antibiotics), streptococci (beta-hemolytic strains, alpha-hemolytic strains and enterococci), pneumococci, gonococci, Hemophilus influenzae.

even against resistant staph[1,2] . . .

Per cent of "antibiotic-resistant" epidemic staphylococci cultures susceptible to Tao, erythromycin, penicillin and chloramphenicol.[1]



well tolerated . . .

REACTIONS:

(a) adults	(b) children
Total—9.2% (20 out of 217)	Total—0.6% (1 out of 167)
Skin rash—1.4% (3 out of 217)	Skin rash—none
Gastrointestinal—7.8% (17 out of 217)	Gastrointestinal—0.6% (1 out of 167)

There was complete freedom from adverse reactions in 94.5% of all patients. Side effects in the other 5.5% were usually mild and seldom required discontinuance of therapy.

plus . . . stability in gastric acid • rapid, high and sustained blood levels • high urinary concentrations • outstanding palatability in a liquid preparation.

Dosage and Administration: Dosage varies according to the severity of the infection. For adults, the average dose is 250 mg. q.i.d.; to 500 mg. q.i.d. in more severe infections. For children 8 months to 8 years of age, a daily dose of approximately 30 mg./Kg. body weight in divided doses has been found effective. Since Tao is therapeutically stable in gastric acid, it may be administered at any time, without regard to meals.

Supplied: Tao Capsules—250 mg. and 125 mg.; bottles of 60. Tao for Oral Suspension—1.5 Gm.; 125 mg. per teaspoonful (5 cc.) when reconstituted; unusually palatable cherry flavor; 2 oz. bottle.

References: 1. English, A. R., and Fink, F. C.: Antibiotics & Chemother. (Aug.) 1958. 2. English, A. R., and McBride, T. J.: Antibiotics & Chemother. (Aug.) 1958. 3. Wennersten, J. R.: Antibiotic Med. & Clin. Therapy (Aug.) 1958. 4. Celmer, W. D., et al.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 476.

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SCIENCE FOR THE WORLD'S WELL-BEING

*TRADEMARK

Meetings and Announcements

STATE

Conference on Electrical Techniques in Medicine and Biology, eleventh annual session, Nicollet Hotel, Minneapolis, November 19, 20 and 21, 1958.

NATIONAL

American College of Surgeons sectional meetings:

Charleston, South Carolina, January 19, 20, 21, 1959

Houston, Texas, February 2, 3, 4

Vancouver, British Columbia, February 26, 27, 28

St. Louis, Missouri, March 9-12 (four-day meeting; joint Nurses Sessions)

Montreal, Quebec, April 6-9 (four-day meeting; joint Nurses Sessions)

Chicago Medical Society, Postgraduate Courses, 86 E. Randolph Street, Chicago 1, Illinois. Medicine—October 27-31, 1958, and Surgery—November 3-7, 1958.

Fifth Annual Conference of Mental Health Representatives of the State Medical Associations sponsored by the AMA Council on Mental Health, November 21 and 22, 1958, Drake Hotel, Chicago.

Gerontological Society, Inc., Bellevue Stratford Hotel, eleventh annual scientific meeting, Philadelphia, Pennsylvania, November 6, 7, and 8, 1958.

Medical Society of the State of North Carolina 105th Annual Sessions, George Vanderbilt Hotel, Asheville, North Carolina, May 3-6, 1959.

National Society for Crippled Children and Adults, 1958 convention, November 16-20, Statler Hotel, Dallas, Texas.

Second Oklahoma Colloquy on Advances in Medicine, Arthritis and Related Disorders, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma, November 12, 13, 14 and 15, 1958.

Western Surgical Association, annual meeting, Hotel Kahler, Rochester, November 20, 21 and 22, 1958.

INTERNATIONAL

International College of Surgeons, southeastern regional meeting, Miami Beach, January 4-7, 1959. For information, write to Harold O. Hallstrand, M.D., 7210 Red Road, South Miami, Fla., chairman.

AMA READING MATERIALS AVAILABLE

Additional quantities of the following previously listed AMA leaflets are available without charge: "The Fifth Freedom" points out the importance of the patient's right to choose the doctor who will best serve his family. The other, "Do You Like to Make Decisions?" stresses the role of the physician's judgment in prescribing personalized care suited to the patient's needs. Also available without charge: "To All My Patients." A simple informative booklet which discusses the various aspects of a good doctor-patient relationship.

The leaflets are suitable for distribution to office patients and as enclosures to be mailed with statements.

Forward requests to Minnesota State Medical Association, 496 Lowry Medical Arts Building, Saint Paul 2, Minnesota.

AMA CLINICAL MEETING IN MINNEAPOLIS

More than 3,000 physicians are expected to attend meetings of the twelfth clinical meeting December 2 to 5, in Minneapolis.

Practical information for daily use by general practitioners will be highlighted in the program activities.

The house of delegates of the AMA will conduct its sessions at the Leamington Hotel.

The Minneapolis Auditorium will house scientific and technical exhibits.

AMA's council on scientific assembly is in charge of the meeting. Dr. Alphonse McMahon, St. Louis, is Chairman; Dr. Thomas Hull, Secretary, and George Larson, Convention Services Manager.

Dr. O. L. Norman Nelson, President of the Hennepin County Medical Society, is the local general chairman for the clinical meeting. Local scientific program chairman is Dr. Neal L. Gault, Director of post-graduate education at the University of Minnesota Medical School.

Minnesota's Governor, Orville L. Freeman, will address the house of delegates. Dr. Horatio B. Sweetser, President of the Minnesota State Medical Association, will extend the welcome on behalf of the State Association.

VAN METER PRIZE AWARD ANNOUNCED

The American Goiter Association again offers the Van Meter Prize Award of $300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held in the Drake Hotel, Chicago, Illinois, April 30, May 1 and 2, 1959.

The competing essays may cover either clinical or research investigations, should not exceed 3,000 words in length and must be presented in English. Duplicate typewritten copies, double spaced, should be sent to the Secretary, Dr. John C. McClintock, 149½ Washington Avenue, Albany 10, New York, not later than January 15, 1959.

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MORE THAN
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(Continued from Page A-60)

CONTINUATION COURSE

The University of Minnesota announces a continuation course in Pediatric Radiology for Radiologists which will be held on the University campus from November 3 to 7, 1958. The course will be held in the Mayo Memorial Auditorium in the University of Minnesota Medical Center on the Minneapolis Campus.

STATE FAIR POLIO PROTECTION PROJECT

A total of 4,959 persons over the age of twenty-one years received their first Salk polio shot at the Minnesota State Medical Association State Fair booth during the ten-day 1958 event.

In addition, approximately 7,000 family health records, 6,000 individual health records, and 4,500 "Know Your Doctor" booklets were distributed.

To Eli Lilly and Company, the Minnesota State Medical Association extends sincere appreciation for making the necessary Salk vaccine available without charge.

Additional acknowledgments are extended to the members of the Academy of General Practice, for volunteering their services by administering shots to State Fair goers; to the Minnesota Nurses Association and Twin City Hospitals for providing nursing staffs; Minneapolis Health Department, syringes; and the Minneapolis Council of Jewish Women, registration personnel.

Much of the success enjoyed by the project may be attributed to the attention received from Minnesota radio and television stations and the daily and weekly press.

Personal physicians of individuals receiving the initial polio shot at the State Fair have been notified by mail, in order to facilitate follow-up shots.

Sample copies of follow-up cards designed for the convenience of the physician are enclosed with the September Newsletter. These cards are available without charge from the State Office or from Eli Lilly and Company representatives.

RANGE MEDICAL SOCIETY GRANTED STATE CHARTER

Minnesota's newest medical society, the Range Medical Society, was chartered August 26, in Grand Rapids.

With a membership of approximately 100 medical men, the new organization previously was known as the Iron Range division of the St. Louis County Medical Society. Its scope runs from Grand Rapids to Ely on the Iron Range, plus Koochiching County.

The charter was presented to the organization president, Dr. O. C. Braun, Grand Rapids, at a dinner meeting at the Rainbow Club in Grand Rapids by Dr. Clarence Jacobson, Chisholm, councilor for the Minnesota State Medical Association. Other officers are Dr. Arthur M. Antonow, Virginia, vice president, and Dr. R. T. Kelly, Grand Rapids, secretary-treasurer.

Organization of the society is a result of an amicable agreement involving Iron Range doctors and members of the St. Louis County Medical Society. It was decided that an autonomous group was advisable as a matter of convenience. Formation of the new group came to a head this spring when it was decided to apply for a state charter.

Present officers of the new organization took over last January 1 as officers of the Iron Range division of the St. Louis County group. They will carry on until the next election.

Headquarters of the Range medical group is in Hibbing. Meetings are held six times a year and generally include a scientific program. Meetings are generally conducted at Hibbing, Virginia, or Grand Rapids.

At the first meeting, Dr. Cy Barnum of the University of Minnesota discussed present lines of research in the fight against cancer.

Dr. Horatio B. Sweetser, president of the Minnesota State Medical Association, and Dr. John C. Feuling, president of the St. Louis County Medical Society, were guests at the dinner.

The St. Louis County Medical Society embraces not only the southern half of the county but also Lake, Cook and Carlton Counties.

SISTER KENNY DOCTORAL SCHOLARSHIPS OFFERED

The Sister Elizabeth Kenny Foundation announces continuation of its program of post-doctoral scholarships to promote work in the field of neuromuscular diseases. These scholarships are designed for scientists at or near the end of their fellowship training in either basic or clinical fields concerned with the broad problem of the neuromuscular diseases.

The Kenny Foundation Scholars will be appointed annually. Each grant will provide a stipend for a five-year period at the rate of $5,000 to $7,000 a year depending upon the scholar's qualifications. Candidates from medical schools in the United States and Canada are eligible.

Inquiries regarding details of the program should be addressed to: Dr. E. J. Huenekens, Medical Director, Sister Elizabeth Kenny Foundation, Inc., 2400 Foshay Tower, Minneapolis 2, Minnesota.

GOVERNOR CALLS SECOND CONFERENCE ON AGING

Thanks to the first Governor's Conference on Aging in 1956, Minnesota was alerted to the tremendous growth in the number of elderly people. The Conference also dramatically outlined the problems which have accompanied this growth in the number of our senior citizens.

Now the second Governor's Conference on Aging has been called by Governor Orville Freeman, to be held November 20-21, at the Lowry Hotel, St. Paul, Minnesota. Registration is two dollars.

This second conference, supported by eight nationally prominent speakers in the field of aging, will concentrate on how to achieve community action to "Extend the Independent Years." Workshops on community action, health, employment and housing will be featured.

For further information, write Bernard E. Nash, Special Consultant on Aging, State Department of Public Welfare, St. Paul 1, Minnesota.

Woman's Auxiliary

COUNTY AUXILIARIES URGED TO APPOINT LEGISLATIVE CHAIRMEN NOW

All county auxiliaries are urged to appoint a legislative chairman in order that they may receive timely legislative information.

Forward names and addresses of appointees to either of the co-chairmen: Mrs. L. Raymond Scherer, 1930 Irving Avenue South, Minneapolis, or Mrs. L. R. Boies, 410 Cottage Downs, Hopkins.

CLAY AND BECKER COUNTY AUXILIARIES HOSTESSES TO MEDICAL ASSOCIATION

The auxiliaries of Clay and Becker counties were hostesses to the doctors' wives when the Northern Minnesota Medical Association met at Detroit Lakes, September 5 and 6. Thirty-three women attended a luncheon at the Detroit Lakes Country Club. A boat trip had been planned for the afternoon, but due to inclement weather, the women played bridge instead.

Mrs. John Rutledge, Detroit Lakes, President of the Becker County Auxiliary and Mrs. J. W. Duncan, Moorhead, President of the Clay County Auxiliary, were in charge of arrangements.

Guests at the luncheon included Mrs. Reuben Erickson, Minneapolis, President of the State Medical Auxiliary; Mrs. Gilman Goehrs, St. Cloud, state treasurer, and Mrs. C. E. Carlson, Alexandria, 8th district regional adviser.

On Saturday morning, Mrs. Arnold Larson, Detroit Lakes, graciously opened her home for the women for forenoon coffee.

RANGE COUNTY MEDICAL AUXILIARY

The first meeting of the Range Medical Auxiliary was held on Thursday, September 25. The Range Auxiliary now has its own charter and its members will no longer be affiliated with the St. Louis County Auxiliary. Mrs. Reuben Erickson, Minneapolis, State Auxiliary President, attended this first meeting which was held at Hibbing.

Mrs. L. W. Johnsrud, Hibbing, is the president of the new Range Medical Auxiliary.

SOUTHWESTERN MINNESOTA AUXILIARY

The Southwestern Minnesota Auxiliary had its first meeting of the year at Worthington, on September 22. Mrs. Raymond Scherer, Minneapolis, legislative chairman for the State Medical Auxiliary, reported on the medical legislation that will be forthcoming in the next state legislature and congress.

Mrs. Reuben Erickson brought greetings to the wives as president of the State Medical Auxiliary.

AMA AUXILIARY ACTIONS

Attendance at the annual meeting of the Auxiliary to the American Medical Association, held in San Francisco, June 23-27, exceeded the 2,100 mark.

Four hundred and eighty delegates, forty-seven state



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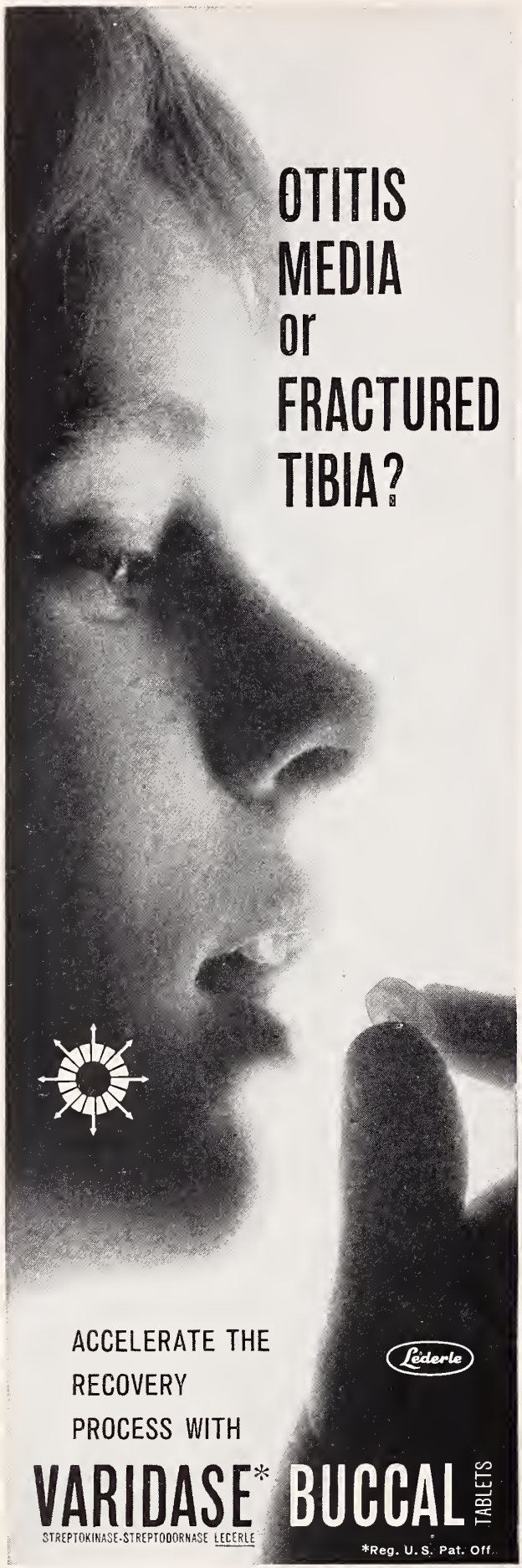
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presidential delegates, and 1,131 members were included in the total attendance figure.

The House of Delegates accepted a revision of the By-laws which would change the name of the organization to the Woman's Auxiliary to the American Medical Association.

A change in the ratio of national delegates was amended to include one delegate for every three hundred members or major fraction thereof.

Members were told that contrary to popular conception or misconception, the AMA is not opposed to all federal health legislation. It was pointed out that in the 84th Congress, twenty-two health bills were passed with the AMA supporting nineteen of them.

The medical profession is against the Forand bill, but is in favor of care of the aged. We believe that the first responsibility should be that of the family. As a positive approach to this problem, the AMA has formed the Joint Council on Health Care of the Aged to survey the actual needs and make the necessary recommendations. At this time no agency, federal or otherwise, has the accurate facts on this subject. The council is composed of the American Hospital Association, the American Dental Association, the American Nursing Home Association, and the American Medical Association.

Mrs. E. Arthur Underwood, on taking office as president, stated that "Safeguard Today's Health for Tomorrow" would be the theme for this year. Three areas were suggested for possible expansion of community service: (1) the physical and emotional health of preschool children, (2) the needs of older people, and (3) nutritional education.

Mrs. Frank Gastineau, of Indianapolis, Indiana, was chosen to serve as president-elect.

RANGE MEDICAL AUXILIARY INTRODUCES SLOGAN, OFFICERS

"Safeguard today's health for tomorrow" is the slogan the Range Medical Society Auxiliary will be following this year, it was announced at the group's membership luncheon held recently at the home of Mrs. R. A. Murray, Hibbing.

The new slate of officers, introduced following the lunch includes: Mmes. L. W. Johnsrud, president; R. T. Kelly, Grand Rapids, vice president; L. W. Morseman, corresponding secretary; B. F. Flynn, recording secretary; W. H. Parker, Chisholm, treasurer; T. Schweiger, historian; O. M. Wilbur, auditor; L. G. Thouin, publicity; R. A. Murray, parliamentarian.

Special guests present at the meeting were Mrs. R. E. Erickson, Minneapolis, president of the State Medical Association Auxiliary; Mrs. M. F. Fellows, Duluth, president-elect of the Auxiliary, and Mrs. G. J. Strewler, Duluth, president of the St. Louis County Medical Auxiliary.

Outstanding projects on this year's agenda were announced as the American Medical Education Foundation, safety, para-medical careers, community services and *Today's Health* magazine.

The next meeting will be held Tuesday, October 28, in Hibbing.

HE NEEDN'T BE HIGH-STRUNG

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Calcium Pantathenate	0.25 mg.
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In Memoriam

HENRY FREDERIC HELMHOLZ, SR.

Dr. Henry F. Helmholz, Sr., head of the Section of Pediatrics at the Mayo Clinic from 1921 to 1946, died in the Methodist Worrell Hospital in Rochester, August 19, 1958, at the age of seventy-five years.

Dr. Helmholz was born in Chicago, Illinois, and received the degree of Bachelor of Science from the University of Wisconsin in 1902, and that of Doctor of Medicine in 1906 from the Johns Hopkins University, where he also served as a fellow in pathology in 1906 and 1907.

From 1907 to 1909, Dr. Helmholz did graduate work in medicine at the University of Berlin, University of Breslau and University of Vienna, returning to Chicago to enter the practice of pediatrics in that city. He was assistant professor of pediatrics in Rush Medical College in Chicago from 1910 to 1920, medical director of the Infant Welfare Society of that city for the same period, and a member of the Otho S. A. Sprague Memorial Institute for Medical Research from 1912 to 1920.

Dr. Helmholz came to Rochester on January 1, 1921, as chief of the Section of Pediatrics. He became a senior consultant at the Mayo Clinic on July 1, 1946, and served as professor of pediatrics in the Mayo Foundation Graduate School, University of Minnesota, from 1921 to his retirement in 1949.

Dr. Helmholz was a member of the Minnesota State Medical Association (Fifty Club), the American Medical Association, the American Pediatric Society, the Northwest Pediatric Society, the American Society of Pharmacology and Experimental Therapeutics, the American Academy of Pediatrics, the American Physiological Society, the American Association of Bacteriologists and Pathologists, the Society for Research in Child Development, the National Research Council, the American Child Health Association, the Alumni Association of the Mayo Foundation, the Society of the Sigma Xi, Phi Beta Kappa, the Alpha Omega Alpha medical honor society and the Chi Psi academic fraternity. He was also a member of the Executive Council of the Governor's Committee on Children and Youth of the State of Minnesota, state chairman of the Exceptional Child of the Minnesota Parent-Teacher Association and a member of the Minnesota Council for the gifted child. He is an associate member of the American Urological Association.

Survivors include his wife, Isabel; four children—Dr. Henry F. Helmholz, Jr., a member of the Section of Physiology of the Mayo Clinic; Margaret (Mrs. Howard B. Burchell), Rochester; Dr. Lindsay Helmholz, professor of physics in the University of California; and Dr. August Carl Helmholz, II, associate professor of chemistry in Washington University, St. Louis, Missouri.

WADE R. HUMPHREY

Dr. Wade R. Humphrey, Stillwater physician, died August 23, 1958, at the age of seventy-nine, following an extended illness in Lakeview Hospital. He had been a practicing physician in Stillwater since 1906.

A native of Bluemont, Virginia, he received his preliminary education at Randolph-Macon Academy, Front Royal, Virginia, and at Randolph-Macon College, Ashland, Virginia. His medical education was obtained at the University of Maryland. Additional special work included one year of residency at University Hospital in Baltimore. He also headed postgraduate work at New York Poly Clinic and New York Post Graduate.

Dr. Humphrey was a member of the Washington County Medical Society, the Fifty Club of the Minnesota State Medical Association, the Elks and Masonic Lodges, and an honorary member of the Rotary Club.

Surviving are his wife, Luella, and one sister, Mrs. Robert James of Round Hill, Virginia.

JAMES S. McCARTNEY

Dr. James S. McCartney, Golden Valley, a professor of pathology at the University of Minnesota, died August 30, 1958. He was sixty-five years old.

A native of Tarentum, Pennsylvania, he was a graduate of Washington and Jefferson College, Washington, Pennsylvania, and Johns Hopkins Medical School.

Dr. McCartney joined the University of Minnesota faculty after service in the Army Medical Corps in France during World War I and as a fellow at the Mayo Foundation in Rochester.

Dr. McCartney was president of the State Board of Examiners in the Basic Sciences.

He was a member of the American Association of Pathologists and Bacteriologists, the College of American Pathology, the American Association for Cancer Research, the Minnesota Society of Clinical Pathology, the Minneapolis Academy of Medicine, Hennepin County Medical Society, the Minnesota State Medical Association, the American Medical Association, and Phi Beta Pi fraternity.

Survivors include his wife, Naomi Hough McCartney; two sons, James S., St. Paul, and William H., Wayzata; four sisters, Mrs. Austin Lee George, Alice McCartney, Mrs. A. Copeland Campbell, all of Pittsburgh, Pennsylvania, and Mrs. Herbert Sackville, Dallas, Texas.

PENICILLIN CURB

World Health Organization has proposed sale and use of penicillin to be put under medical control. It said in U. S. alone 1,000 persons had died by 1957 after improper use of the drug. Statistically, not more than 25 of every 10 million shots lead to serious consequences, and only three of them may be fatal, WHO report said. —AMA *News,* Oct. 6, 1958.

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Communications

Dear Dr. Wells:

This fall University of Minnesota Television will feature a new series of thirteen programs in co-operation with the University's Department of Psychiatry. The series "Understanding Human Behavior" will be presented by Dr. Bernard C. Glueck, Jr., Associate Professor of Psychiatry. Dr. Glueck will discuss the fundamental patterns of human behavior from the point of view of adaptational psycho-dynamics. We feel the series will be both interesting and profitable to the viewer. Therefore, we would appreciate an announcement of the series and any publicity you can give us in MINNESOTA MEDICINE.

"Understanding Human Behavior" starts Tuesday evening, October 7, on University of Minnesota Television over KTCA-TV, channel 2, and continues every Tuesday evening through December 30.

Thank you for your co-operation.

Minneapolis, Minnesota MRS. JEAN LOWE,
September 16, 1958 *Program Supervisor*

To the Editor:

I have recently had a number of inquiries concerning the editorial written by Donald Cordes in MINNESOTA MEDICINE for July, 1958, pages 504-505. I understand that many pathologists, particularly in the Twin Cities area, as well as many of the radiologists and internists, are much concerned about the appearance of this article. They are feeling that it was reviving a very touchy subject which they believe was quite undesirable. They have asked me to contact you as editor-in-chief to see if you had a particular reason for inviting this type of editorial.

Please be assured that I am speaking not for myself as an individual, but for the group as a whole. However, I am somewhat in agreement with their position but I can see that such a subject has to be discussed from both sides. If you can clarify this problem for me, it will be very much appreciated.

L.A.W.

EDITOR'S NOTE: Mr. Cordes' editorial, "The Hospital and Medical Practice—Administration Viewpoint," was published one year after its unsolicited receipt for the following reasons:

1. A solicited reply to the Cordes' editorial written by an officer of the Iowa State Medical Society was finally received and published in the same issue of MINNESOTA MEDICINE.
2. In the past five years, five editorials have appeared in MINNESOTA MEDICINE presenting the physician's viewpoint.
3. Mr. Donald Cordes was one of the most active and outspoken of the Hospital Administration forces in the Iowa dispute.
4. His reasoning or lack of it must represent the accumulation of most of the important thought of the American Hospital Association and its membership.
5. A careful analysis of the editorial will reveal a complete lack of appreciation of the physician's viewpoint, and the obvious omission of the principal reason for the medical control of the practice of medicine, hence the weakness of the hospital administrator's arguments. Mr. Cordes completely avoids the principal issues and plays up the greed of man.

This Section is for you to voice your convictions, comments, and queries on all subjects political, economic, historic, humorous, scientific or otherwise, to many physicians. Writings not sufficiently formal and too brief for an editorial or a scientific manuscript are requested. Clinical and research observations, no matter how brief, similar to those in *The Lancet* (London), are particularly encouraged.

6. The Minnesota State Medical Association has been confronted by this illegal and illogical practice of medicine by the layman for years. The House of Delegates took its first action to correct the mistakes of the past at its May meeting, (see editorial in August issue, MINNESOTA MEDICINE).
7. The physicians of Minnesota are quite capable of analyzing Mr. Cordes' motivations and reasoning as they apply to the kind of medical care which is likely to be most beneficial to the people.

DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE CORONER AND DEPUTY CORONERS

It is essential that the Coroner respond to summons at any time, night or day, Sundays or holidays. His jurisdiction comprises all of Ramsey County.

The call will come from the Saint Paul Police Department, from the Ramsey County Sheriff's office, from a funeral director or a member of the deceased's family, or possibly from a neighbor or passerby who has discovered a body. The Coroner or his deputies must respond to these calls immediately. Delay in most cases works a hardship on the law-enforcement agencies involved and on the relatives and friends of the deceased. The Coroner or his deputies should be prepared for any eventuality; this includes always having with him the miscellaneous blank forms furnished by the Coroner's office.

The person taking the call for the Coroner's office must ascertain the time of call, the location where the body may be, and should get all the information which may help him in his investigation in the future. If there is no police officer at the scene, it is advisable for the deputy coroner to ask the co-operation of the Police Department of the village or city. If the private physician of the deceased is at the scene, it is important to learn from him the past medical history and other pertinent facts about the deceased.

Any licensed doctor may make the pronouncement of death; but if the doctor has not seen the deceased within thirty days, he does not have the authority to sign the death certificate. He must furnish the Coroner's office with all the information he has pertinent to the case and the Coroner's office will have one of their medical deputies examine the deceased and make the diagnosis of death.

In many cases, the Coroner's office must send a hearse to the scene. For sake of convenience and economy, the Coroner's office hires the services of the Martin's Am-

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Instructions given to deputies working under the supervision of the Ramsey County Coroner.

bulance Service. This requires Martin's Ambulance to send a hearse and driver to the scene; and in case there is more than one death, even three or four at the same time, they are required to send as many ambulances and drivers as the Coroner deems necessary.

It is the duty of the Coroner or deputy coroner to make a thorough examination of the body as soon as he comes on the scene. If he feels that further examination and investigation are required, he must remove the body to the Ramsey County Morgue. If the deputy thinks that the death was from natural causes, he may release the body to the funeral director designated by the surviving member or members of the family.

The deceased must be taken to the morgue if his death was the result of homicide, suicide, or accident, or where there is a suspicion of foul play.

It is desirable, though not always necessary, to obtain written consent from the next of kin of the deceased for an autopsy. The Coroner's office has specially prepared blanks for this purpose. A disinterested person, preferably a police officer or deputy sheriff, must witness such consent.

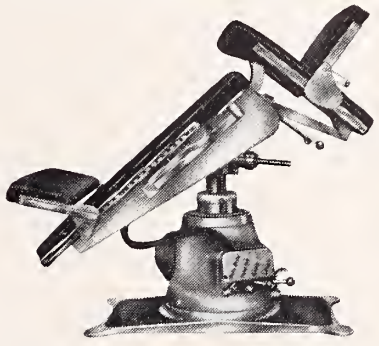
If the Coroner or deputy coroner has any suspicion that foul play is involved, he should remove any person or persons from the immediate vicinity. His next step should be to notify the homicide division, Saint Paul Police Department, and then ask the identification division to send one of their representatives to the scene to take pictures, to make measurements of the room, to note the position of the body, and to detain all possible witnesses that were near the scene at the time of death. It is very important to get the names, addresses, and phone numbers of all witnesses and of any other person or persons who may have some information concerning the death. In the case of suicide or accidental death, it is imperative that all past medical history should be acquired from the deceased's family physician and relatives. This enables the Coroner or his deputy to make a more accurate diagnosis of the cause of death.

It is the duty of the Coroner's office in the case of homicide, suicide, or accidental death to remove all effects from the body of the deceased. If the deceased was living alone, it is necessary to make a complete inventory of the effects in the deceased's room, apartment, or home, whichever it may be. Also to take possession of all valuables such as watches, rings, insurance policies, deeds, safety deposit keys, and all papers that are considered valuable by the investigating officer.

If there is any suspicion in the Coroner or deputy coroner's mind that the death was from unnatural causes, he should ask a pathologist under the Coroner's jurisdiction to perform an autopsy immediately.

If there are no relatives residing in this city or county, all possible efforts should be made to get in touch with out-of-county relatives, even at the cost of telephoning to any part of the United States or Canada. If there are any relatives of the deceased present at the scene and the death is natural, it is within reason to turn the apartment or home and the effects therein over to the nearest relative. The Coroner or deputy coroner should get a written release at this time. In the event there are no relatives living within the city or county, the home shall be thoroughly inventoried, all effects of value taken to the Coroner's office, and an off-duty police officer or deputy sheriff hired to protect that property and the effects within until we get a release from the Probate Court or an attache, presumably a lawyer. The apartment or home, whichever it may be, shall have the Coroner's seal placed on the door of any entrance or exit on the outside of building.

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When the deceased is taken to the Ramsey County Morgue and the death is homicide, suicide, or accidental, it is mandatory that the Coroner or deputy coroner take a blood sample immediately. This blood sample should be taken to a private chemist, or the State Crime Bureau, to be checked for alcohol, barbiturates, and if necessary carbon monoxide gas poisoning. It is important that nothing about the body or where it is found is overlooked.

If there is any question in the Coroner's or deputy coroner's mind that there is evidence of foul play, everything should be left as it is and the proper authorities called into the case.

All these procedures must be carried out promptly and faithfully according to law so that we all may discharge our responsibilities properly to the community, as the work of the Coroner and his deputies is in essence a duty to society.

Doctor Henderson or his chief investigator, Tom Flaherty, must be called and advised about all homicides, suicides, and accidental deaths.

A. J. Henderson, M.D.
Ramsey County Coroner

General Interest

Dr. William H. Bickel, head of the Section of Orthopedic Surgery in the Mayo Clinic and associate professor of orthopedic surgery in the Mayo Foundation, Graduate School, University of Minnesota, left Rochester on August 31 to visit Army medical installations in France, Germany, and Italy in the capacity of orthopedic consultant to the Surgeon General of the U. S. Army. He presented lectures, made rounds with Army medical officers and saw individual patients.

* * *

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club in St. Paul, Tuesday, September 9. The scientific program presented included: "Stereotactic Surgery," **Dr. Lyle French** and **Dr. Richard Strassburger**; and "Tranquilizers and Changing Ecology in State Hospitals," **Dr. Carl Koutsky.**

* * *

Dr. Lloyd C. DeMarais joined the general surgical staff of the Mesaba Clinic on August 19.

* * *

Dr. F. H. Magney, Duluth, delivered the graduation address at the School of Physical Therapy, Mayo Clinic, Rochester, on August 29.

* * *

Dr. Karl W. Anderson, president of the Minnesota Heart Association, was a speaker at a joint luncheon meeting of the Minnesota Heart Association and the Minnesota State Association of Life Underwriters, held on the University of Minnesota campus.

* * *

Dr. John Watkins and staff have completed the moving of office and medical equipment into the new medical clinic on the corner of First Avenue and Second Street, S.W., in Wells.

* * *

Work has started on excavation for new office building and medical center by **Dr. R. A. MacDonald** of Littlefork. The new 30 x 50 foot building will provide modern offices, reception and examination rooms as well as x-ray and operating rooms when fully completed.

* * *

The staff of the Blue Earth Medical Center has announced the arrival of **Dr. Arthur Sundberg.** Dr. Sundberg fills the spot left open at the clinic with the recent departure of **Dr. D. V. Smith**, who has moved to Seattle, Washington. He joins **Dr. George Drexler** and **Dr. John Anderson** in the clinic.

* * *

Dr. Frederic J. Kottke, Minneapolis, was named president-elect of the American Congress of Physical Medicine and Rehabilitation at its convention in Philadelphia. Dr. Kottke, who is professor and head of the department of physical medicine at the University of Minnesota, will become president of the organization at the end of next year's convention in Minneapolis.

* * *

The Augustana Lutheran Church has commissioned two medical doctors for missionary service in Africa. They are **Dr. Denis Lofstrom**, Pine River and **Dr. Joseph L. Norquist**, Thief River Falls.

* * *

Dr. Donald E. Wohlrabe has begun the practice of medicine. He will be associated with his father, **Dr. E. J. Wohlrabe** in the latter's office in Springfield. Dr. Wohlrabe will specialize in the field of general surgery.

* * *

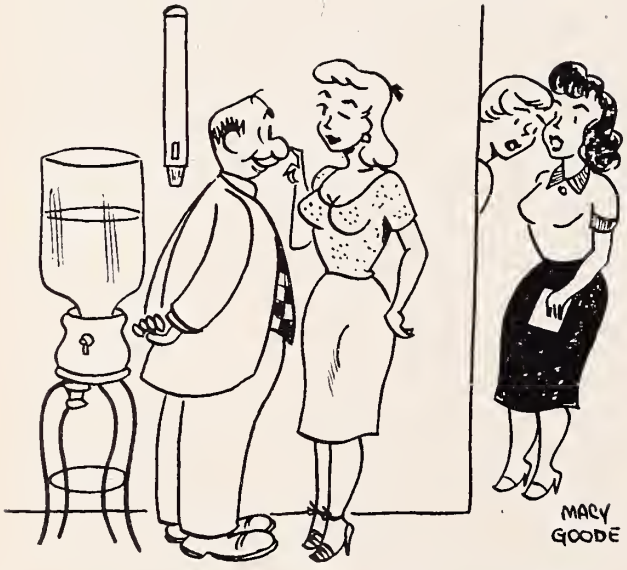
Dr. Francis Boyle, who has been practicing medicine at Tracy the last two years, has opened his new medical clinic in Springfield. The clinic is a one-story brick building, 30 x 46 feet. The air-conditioned clinic will include a waiting room, offices for two physicians, two examining rooms, an x-ray room, a room for minor surgery and therapy, and a bookkeeping room.

* * *

Dr. Raymond L. Page, St. Charles physician, and his wife were recently honored at a farewell community picnic held in the City Park of that community. Residents of Dover, Elba, Altura, Utica, Saratoga, and other surrounding areas participated in the gathering. Dr. Page recently completed thirty-one years of practice in St. Charles.

* * *

A "Dr. Ellison Recognition Day" was held Sunday, August 31, in the new high school auditorium in Monticello. The community project honored **Dr. Frank Ellison**, well-known physician who has served forty-



"SHE MUST HAVE RINGWORM . . . . ALWAYS TRYING TO 'WRING' SOMETHING OUT OF SOMEONE!"

seven years in the field of medicine. Of this time the doctor has served Wright and neighboring counties for forty-five years.

* * *

Dr. Hendrik DeKruif, who has been associated with the Fergus Falls Clinic since June, 1950, has left Fergus Falls for Meadville, Pennsylvania, where he will start a private practice in internal medicine.

* * *

Dr. John E. Quast of Fairfax has affiliated with the Long Prairie Clinic in Long Prairie, as of September 8. Other members of the group are **Drs. A. H. Borgerson, M. E. Mosby** and **A. Erickson.**

* * *

Dr. Walter A. Fansler, Minneapolis, was a guest speaker at the Washington State Medical Association meeting in Spokane, Washington, September 14. Dr. Fansler presented papers on "Polyps of the Colon" and "Hemorrhoids and Fissures."

* * *

New officers of the Northern and Southern Minnesota Medical Associations, elected at annual meetings of the two groups held in Detroit Lakes and Hutchinson, respectively, are as follows:

Northern.—**Dr. Ralph Eckman,** Duluth, president; **Dr. O. K. Behr,** Crookston, vice president; **Dr. C. L. Oppegaard,** Crookston, secretary-treasurer.

Southern.—**Dr. William O. Finkelnburg,** Winona, president; **Dr. E. Covell Bayley,** Lake City, first vice president; **Dr. C. G. Sheppard,** Hutchinson, second vice-president; **Dr. G. R. Diessner,** Rochester, secretary-treasurer.

* * *

Dr. Henry W. Dodge, Jr., a member of the Section of Neurologic Surgery of the Mayo Clinic since 1951, has resigned that post and will engage in private research work.

* * *

Dr. James A. Schneider, recently a fellow in Radiology in Mayo Foundation and a lifelong resident of Rochester, has left that city and is now associated with Drs. Rees, Haslinger, Nichols and Bline in the practice of radiology, Portland, Oregon.

* * *

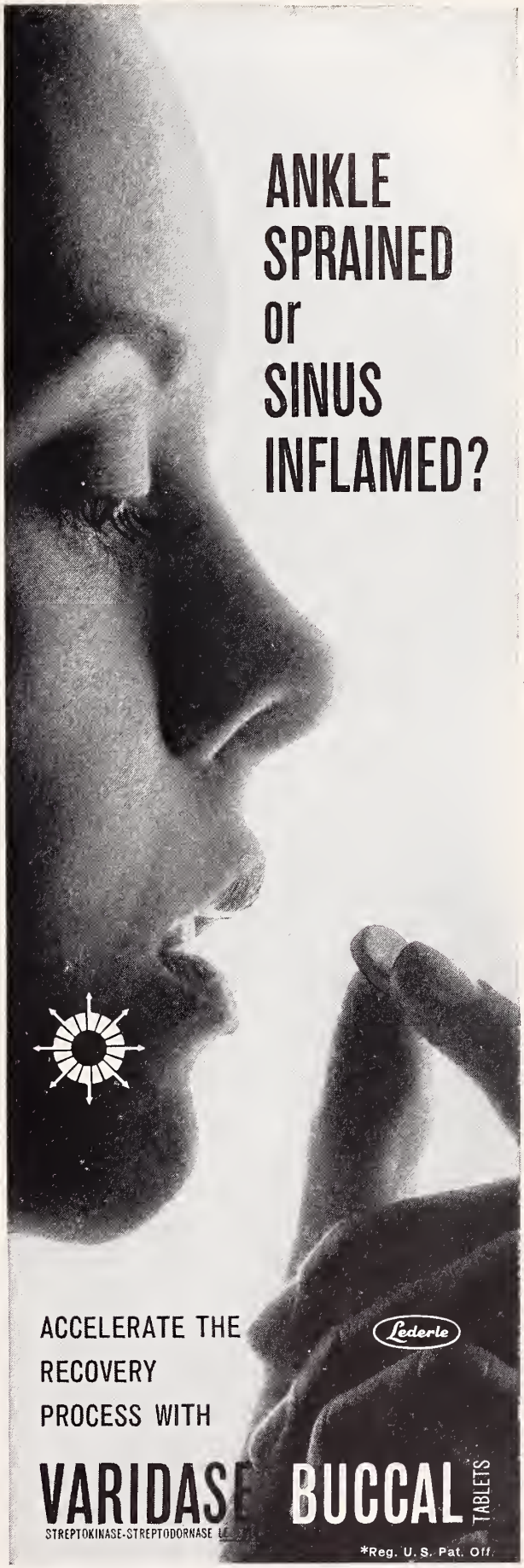
Dr. Jack V. Wallinga, Minneapolis, was recently elected to the American Academy of Child Psychiatry. Also at the recent meetings of the American Orthopsychiatric Association in New York, he served as chairman of a session on the subject of "Group Therapy with Delinquent Adolescents" and reported on a study of the psychodynamics of adolescent auto theft offenders.

* * *

Dr. R. O. Sather, Crookston, was a recent guest speaker at the annual fall festival at the Pioneer Memorial Home in Erskine.

* * *

Dr. Edwin W. Gerrish became associated with the Klefstad Clinic, Greenbush, as of September 1. He has been assistant professor of surgery and director of children's surgery at the University of Cleveland, Ohio, for the past eight years.



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Dr. Donald Mulder, a member of the staff of the Mayo Clinic in the section of neurology, was awarded the Southern Minnesota Medical Association medal for the best paper presented at the association's annual meeting in Hutchinson recently. His paper was on the subject, "Differential Diagnosis and Treatment of Epileptic Seizures."

* * *

Eden Valley residents recently paid tribute to **Dr. D. C. O'Connor** for his years of service to that community. Dr. O'Connor has practiced in his present position since 1911.

* * *

Dr. Leonard Arling has been named a director of the Hennepin County District of the American Cancer Society. He will fill a two-year assignment. **Dr. James A. Johnson** is district president.

* * *

Dr. J. A. Bargen of the Mayo Clinic, president of the American Gastroenterological Association, was a recent speaker at the Scott and White Memorial Hospital, Temple, Texas. He addressed more than 100 doctors who trained as interns and residents there and former staff members of the hospital. Dr. Bargen's subject was the problem of ulcerative colitis.

* * *

Half a century of medical service to Minnesota was recently noted as eighty-year-old Mankato physician, **Dr. Adolph G. Liedloff** was awarded an honorary membership certificate in the Minnesota Public Health Association by **Dr. A. B. Rosenfield,** director of the Division of Special Services, Minnesota Health Department, at the twelfth annual conference of the association, St. Paul Hotel, St. Paul.

* * *

The thirty-fourth annual meeting and reunion of the Alumni Association of the Mayo Foundation was held October 2, 3 and 4. General chairman of the event was **Dr. W. G. Sauer.** Members of committees: Program —**Dr. D. R. Nichols,** chairman, **Drs. C. A. Owen** and **W. H. ReMine;** Local Arrangements—**Dr. G. A. Peters,** chairman, **Drs. H. J. Svien** and **G. D. Davis;** Necrology —**Dr. E. D. Bayrd,** chairman; auditing—**Dr. L. E. Ward,** chairman; speaker—**Dr. E. H. Rynearson,** chairman, **Drs. O. T. Clagett** and **K. B. Corbin;** nominating committee—**Dr. L. O. Underdahl,** chairman. **Dr. James F. Weir** is president of the association.

* * *

Recently honored for twenty-five years of service to the area was *Dr. C. A. Boline,* Battle Lake physician. More than 500 persons from the surrounding area gathered in the Battle Lake High School Auditorium for the event.

* * *

"Triketopyrimidine Metabolism" was the title of the paper presented by Robert P. Jeub and Ralph Rossen at the joint meeting of the Central and Eastern Electroencephalographic Societies on September 12, 1958. The meeting was held at the Toronto General Hospital, Toronto, Canada.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

MINNEAPOLIS DENTIST SENTENCED ON BASIC SCIENCE CHARGE

Dr. Leonard V. Downing, sixty years of age, 100 Oakwood Rd., Hopkins, a licensed dentist in the State of Minnesota, entered a plea of guilty on September 19, 1958 before the Hon. D. E. LaBelle, Judge of the District Court of Hennepin County, to an information charging him with a violation of the Basic Science Act. Judge LaBelle at that time sentenced the defendant to a term of one year in the Minneapolis Workhouse and then stayed the execution of the sentence for one year.

The charge against the defendant Downing arose out of an investigation that had been conducted earlier this year after a 41-year-old Minneapolis widow, Elvira Bernice Nelson, had been hospitalized at Minneapolis General Hospital suffering from the effects of an incomplete abortion. When Mrs. Nelson did not co-operate with the authorities in naming the abortionist, she was charged with the crime of a pregnant woman attempting abortion for which she was sentenced on August 8, 1958 in Hennepin County District Court, pursuant to her plea of guilty, to one year in the State Reformatory for Women at Shakopee, the execution of the sentence being stayed for one year and the defendant placed on probation for the same period of time.

Later, it was discovered that Mrs. Nelson had been given a pelvic examination by Dr. Downing, whereupon he was arrested. Subsequently a complaint, which was issued by the Hennepin County Attorney's Office and signed by a representative of the Minnesota State Board of Medical Examiners, charged the defendant with having committed the crime of abortion. However, as stated above, the charge was reduced when further investigation indicated that the evidence would not warrant a finding of guilty of abortion in this case.

The defendant Downing, who maintains a dental office at 1406 W. Lake Street, Minneapolis was questioned by Judge LaBelle prior to being sentenced and he stated that he was a graduate of the University of Minnesota in dentistry and has practiced that profession for approximately thirty-eight years. Dr. Downing admitted that prior to 1930 he had performed from ten to thirteen abortions and that the highest fee that he received in any one case was $100.00. The defendant also said that he did not know how the patient in this case had obtained his name but he acknowledged that he had examined her on one occasion, it being his opinion as a result of his examination that she was infected and had no need for an abortion. Although Dr. Downing admitted that he had asked $500.00 for his services, he maintained that he did not receive any money. There was no evidence that he had actually been paid a fee in this case.



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Book Reviews

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BOOKS RECEIVED

BACTERIAL AND MYCOTIC INFECTIONS OF MAN. Third Edition. Edited by René J. Dubos, Ph.D., of the Rockefeller Institute. 820 pages. Illus. Price $8.50, cloth. Philadelphia: J. B. Lippincott Co., 1958.

AN ATLAS OF ESOPHAGEAL MOTILITY IN HEALTH AND DISEASE. By Charles F. Code, M.D., Ph.D., Professor of Physiology, Mayo Foundation; Consultant, Section of Physiology, Mayo Clinic; and Brian Creamer, M.D., M.R.C.P., Jerry F. Schlegel, B.S., Arthur M. Olsen, M.D., M.S., F. Edmund Donoghue, M.D., M.S., and Howard A. Andersen, M.D., M.S., all of the Mayo Clinic and Mayo Foundation. 134 pages. Illus. Price $8.50, cloth. Springfield, Illinois: Charles C Thomas, 1958.

CLINICAL RADIOLOGY OF ACUTE ABDOMINAL DISORDERS. Bernard S. Epstein, M.D., Chief, Department of Radiology, Long Island Jewish Hospital, New Hyde Park, New York; Associate Clinical Professor of Radiology, Albert Einstein College of Medicine, Yeshiva University, New York. 352 pages. Illus. Price $15.00, cloth. Philadelphia: Lea & Febiger, 1958.

NEGROES AND MEDICINE. Dietrich C. Reitzes. 400 pages. Price $7.00, cloth. Cambridge, Massachusetts: Harvard University Press for The Commonwealth Fund, 1958.

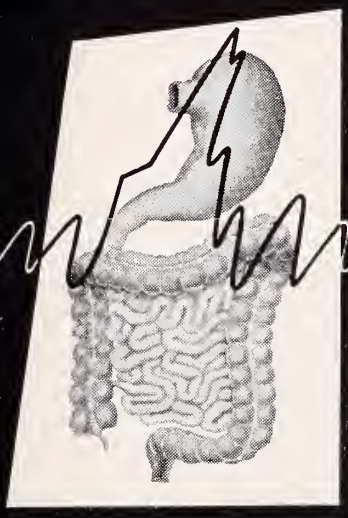
COLD INJURY, GROUND TYPE. Prepared Under Direction of Major General S. B. Hays, Surgeon General, U. S. Army. Editor in Chief, Colonel John Boyd Coates, Jr., MC. Associate Editor, Elizabeth M. McFetridge, M.A. 570 pages. Illus. Price $6.25, cloth. Washington, D. C.: U. S. Government Printing Office, 1958.

THE ETERNAL SEARCH. By Richard Mathison, staff member of *Los Angeles Times;* former editor of *Fortnight* magazine. 384 pages, including biographical sketches and index. New York: G. P. Putnam's Sons, 1958. Price, $5.95.

An anecdotal history of the lore and legend of the world's drugs and medicines from primitive times to the present, The Eternal Search is organized by drug categories and ailments, rather than chronologically, and pursues the important doctrines of medicine down through the centuries. It traces the origins of old wives' tales and shows how some of their beliefs and superstitions have found their way into modern pharmacy. Words and expressions that originated in the lore of medicine are explained, and even the eternal feuds among doctors, druggists, and grocers are covered.

Mr. Mathison has included in his book descriptions of most of the primitive remedies and the weird and

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wonderful attempts of drug therapy during the Middle Ages. There are chapters on poisons, childbirth, plagues, pain killers, cannibalism and cosmetics. The Eternal Search is filled with tales, passing trivia and notes of interest such as: de-horned unicorns frolicking in green pastures; old Eskimos tramping off when it's time to die; bellowing Vikings being chased by raiding hopheads; well-dried and neatly sliced deadmen on display at drug counters; sick whales and virginal hippotomi; Australian bushmen distilling and drinking their best friends . . . various bathers, bleeders, toothpullers, quacks, popes, peasants, ghosts from all the more respectable religions, barbers, bacteria (kindly and vicious), sick lepers and dead newborns; George M. Cohan's father doing an Irish jig to peddle Indian tonic; cures for colds, dropsy, bedbug bites and 20,000 other ailments; a handy guide for home embalming; tips on the growing narcotics in window pots; several convenient methods to live forever; and—a sure cure for the hiccups.

Richard Mathison describes his book as follows:

"The Eternal Search is not a textbook. It offers no panaceas. It makes no effort to censor the doings of our forefathers. . . . It recounts old lies, gossip, and quackeries as well as truth, facts, and acts of great devotion and integrity. If this volume has any purpose, it is . . . to remind us that our past rules our future. . . . We shall, no doubt, seem as superstitious and strange to generations to come."

The idea for The Eternal Search came to Mr. Mathison while he was browsing in a San Francisco Chinatown herb doctor's shop filled with strange roots, plants and dried animals. It occurred to him then that there might be interest in the meaning of these hoary remedies to modern pharmacy. He started collecting all the material he could gather, browsing through books and medical libraries, looking at news clippings, and talking with doctors, pharmacists, and people who remembered old remedies recommended by their grandparents. The result is The Eternal Search, the first one-volume history of drugs, medicine and the art of the apothecary.

IMMUNIZATION INFORMATION FOR INTERNATIONAL TRAVEL. Prepared by Division of Foreign Quarantine, Public Health Service, Washington, D. C.; Government Printing Office, 1958. Price, 30 cents.

The booklet is designed primarily for use of travelers going abroad and for health departments and physicians. It gives current details on immunization requirements for persons entering the United States, including Americans returning from abroad. It also lists requirements and recommendations for immunization in 200 other countries, and in some cares, additional recommendations of the Public Health Service for American travelers.

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REFERENCES: (1) Royer, A., in Welch, H., & Martí-Ibañez, F.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 783. (2) Waisbren, B. A., & Strelitzer, C. L.: *Arch. Int. Med.* **101**:397, 1958. (3) Koch, R., & Donnell, G.: *California Med.* **87**:313, 1957. (4) Roy, T. E.; Collins, A. M.; Craig, G., & Duncan, I. B. R.: *Canad. M. A. J.* **77**:844, 1957. (5) Cooper, M. L., & Keller, H. M.: *J. Dis. Child.* **95**:245, 1958. (6) Caswell, H. T., *et al.*: *Surg., Gynec. & Obst.* **106**:1, 1958. (7) Brown, J. V.; Sedwitz, J. L., & Hanner, J. M.: *U. S. Armed Forces M. J.*: **9**:161, 1958. (8) Sarason, E. L., & Bauman, S.: *Surg., Gynec. & Obst.* **105**:224, 1957.

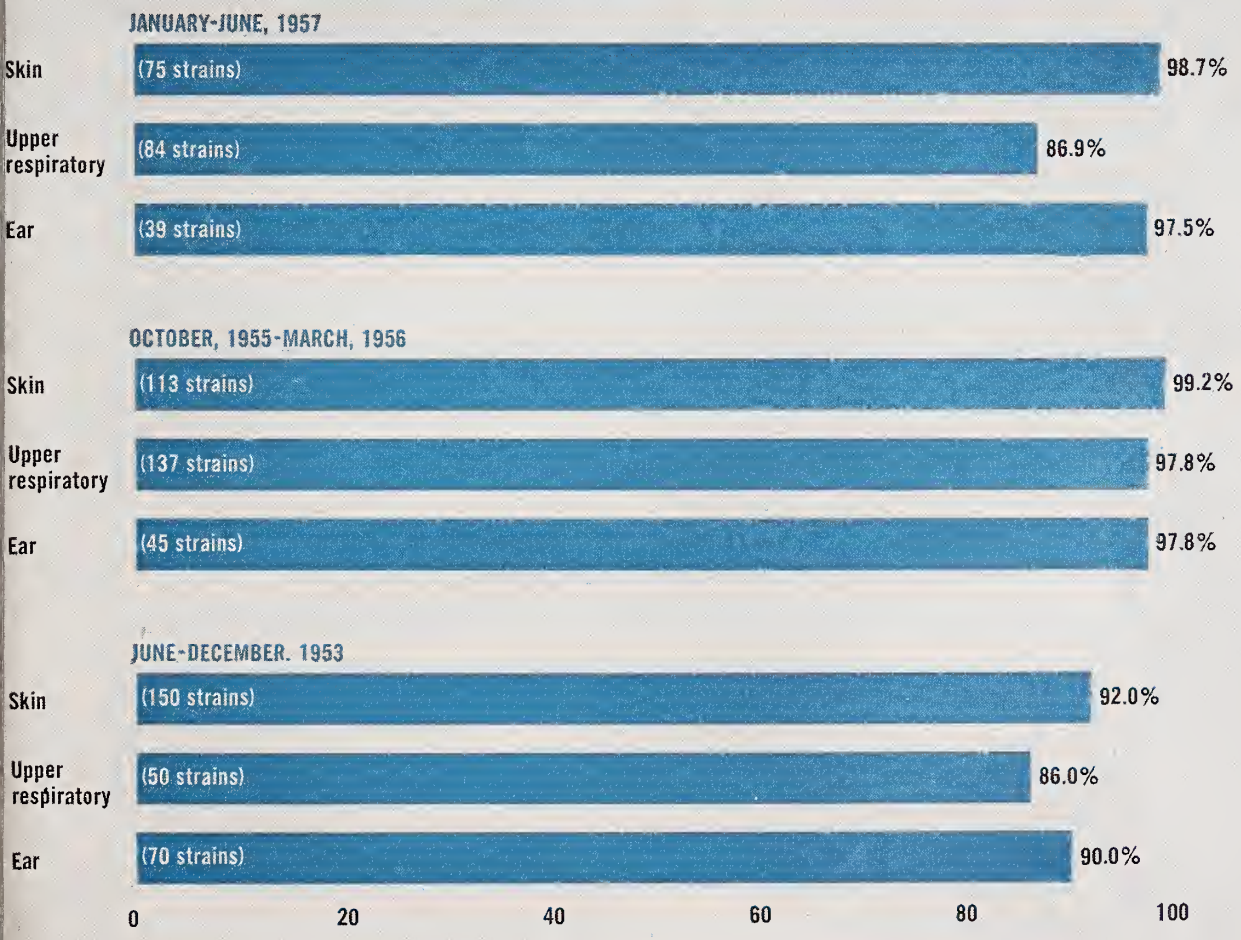
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W. W. Will, M.D. (1958).....Bertha
Eighth District
C. L. Oppegaard, M.D., (1960) *Chairman*..Crookston
Ninth District
Clarence Jacobson, M.D. (1959).....Chisholm

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Poisoning in Children

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Poisoning in children is an important cause of death in Minnesota. Aspirin is a prime offender. Symptoms must be promptly recognized. Treatment constitutes a real emergency. Minnesota's Poison Control Center now is in operation and at the service of all physicians.

OF ALL the tragedies that can befall parents, the greatest is the loss of their child. When this loss is the result of an accident the loss is magnified many times. A fact now well-known is that accidents are the leading cause of death in children. Each year over 6,000 children betweeen the ages of one and four years, alone, died as a result of accidents. Of these 6,000 children, over 1,500 die as the result of swallowing poisonous material. To obtain a more vivid picture of this subject and its importance let us review some of the statistics in our own state of Minnesota.

TABLE I. FATAL POISONINGS UNDER AGE FIFTEEN
Minnesota State Board of Health
1951 through 1955

Medicines (10 from salicylates)	19
Household substances (hydrocarbons, lye, et cetera)	13
Pesticides	1
Miscellaneous	6
Total	39

Table I gives the number of fatal poisonings under the age of fifteen years of age as reported by the Minnesota State Board of Health in a five-year study from 1951 through 1955. Of these thirty-nine fatal poisoning cases in this group salicylates lead as the most frequent medicaments ingested. Let us remember that the incidence of accidental poisoning in children is inadequately represented by mortality tables. It is unfortunate that we have no accurate statistics to show us the frequency with which poisoning occurs. It has been estimated that 1 per cent of all pediatric hospital admissions each year are for accidental poisonings. Even this does not give us a complete picture for there are many cases of poisonings that are treated in the home and in the physician's office and as outpatients in the hospitals. Nevertheless recent studies were made in two separate hospitals in the city of Minneapolis pertinent to this point.

Table II gives a summary of a five-year study at Northwestern Hospital made by Dr. Albert Schroeder, in which he reported 868 cases of accidental poisonings in children under the age of fifteen years. Note that the largest percentage of accidental poisonings occurred as a result of ingestion of medicaments.

TABLE II. POISONINGS UNDER AGE FIFTEEN
Northwestern Hospital—Minneapolis
1951 through 1955

Medicines (363 from salicylates)	516
Household substances (hydrocarbons, lye, et cetera)	135
Pesticides	10
Miscellaneous	127
Total	868

Table III shows a one-year study done at the Minneapolis General Hospital by Dr. Richard Raile. In this one-year study in 1955, there were 340 poisoning cases under the age of fourteen years of age treated at the Minneapolis General Hospital. Of this number, 191 were due to the ingestion of medicaments. Salicylates again were the constituted group of medicaments most frequently ingested. These two case reports closely parallel reports from elsewhere in the United

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States showing that the most frequent accidentally ingested products are medicaments. The most common drug killer is aspirin and other salicylate products. Aspirin outrates all other medicaments in frequency of accidental ingestion.

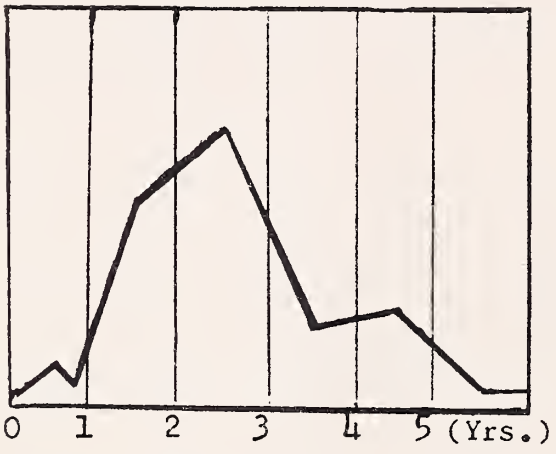


Fig. 1. Incidence of poison ingested by children according to age.

Figure 1 shows that the incidence of poisonings is the greatest in the one-year to five-year age range. Its peak is in the two-year to three-year age group. Recall the development of a child during this period: the motor development is very rapidly enabling a child to walk, climb, pull open drawers, doors and cabinets. A child of this age is an explorer, an adventurer and a taster. If he can pick it up he will smell it and/or put it in his mouth and swallow it. It is during this period then that the greatest number of accidental poisonings in children occur.

Symptoms

Table IV emphasizes that the symptoms of acute poisoning will vary with the poison consumed but in general will fall into one or more of the following groups:

1. *Gastrointestinal.*—Nausea, vomiting and abdominal pain are the most common symptoms encountered.

2. *Respiratory.*—This may range from mild hyperpnea as seen in salicylate intoxication to complete respiratory collapse with loss of consciousness as found in barbiturate or nicotine poisoning.

3. *Circulatory.*—This may be manifested by cyanosis, hemorrhagic manifestations and shock.

4. *Corrosive Action.*—Evidence of erosion of the oral and pharyngeal mucosa and esophagus will occur with the ingestion of lye, phenol, alcohols and acids.

In any child who presents one or more of the foregoing symptoms and in whom adequate evidence for their cause cannot be determined, acute poisoning should be considered. The absence of history of poisoning does not rule out this possibility. It is well to remember that children are usually too young and usually too frightened to give an accurate and adequate history. The latter may often be said of the parents as well.

TABLE III. POISONINGS UNDER AGE FOURTEEN
Minneapolis General Hospital
1955

Medicines (127 from salicylates)	191
Household substances (hydrocarbons, lye, et cetera)	61
Pesticides	38
Miscellaneous	50
Total	340

Treatment

Of the dozens of telephone calls that the busy physician receives daily from worried and frantic parents inquiring as to the welfare of their sick child, very few of these calls constitute a real emergency. Any call about a child who has ingested a poisonous material or who has been suspected of ingesting a poisonous material is truly an emergency call; it can be strongly stated that in poison cases a matter of minutes may mean the difference between life or death. The treatment of poisoning must be immediate. As physicians, we must accept this as a fact. As physicians, we must convince the parents of this fact. Table V indicates that the treatment may be divided into three stages:

TABLE IV. SYMPTOMS

1. Gastrointestinal
2. Respiratory
3. Circulatory
4. Corrosive

TABLE V. TREATMENT

1. Removal of poison
   (a) emetic
   (b) gastric lavage
   (c) exchange transfusion
2. Antidote
   (a) specific
   (b) universal
3. Supportive care

Removal of the Poison.—This may be accomplished by the use of an *emetic*. In general, it can be stated that the use of emetics as the *only* treatment of acute poisoning cases should be *avoided*. First of all because they are usually inadequate to empty the stomach and secondly they tend to give one a false sense of security. If emetics are used they should be used only as a preliminary emergency measure and should be followed by a gastric lavage.

In recent work done in the Department of Pediatrics at Western Reserve University in which dogs were fed toxic levels of sodium salicylate, it was discovered that induced emesis within thirty minutes after ingestion significantly altered the blood salicylate level. I believe that it can be reported from this work that the induction of emesis as soon as possible after ingestion of salicylates is distinctly advantageous in this type of poisoning. However, I do believe that this should still be followed by gastric lavage. Although there are many types of emetics that are available and can be used, apparently the most effective is syrup of ipecac. In our practice, we are now routinely prescribing 1 ounce of syrup of ipecac to parents with instructions to keep this for the specific use of inducing vomiting in their child in case of accidental poisoning. This is given to the parents along with a brief lecture on the dangers of accidental poisoning when the infant is approximately nine to ten months of age.

The method of choice in removal of ingested poisons is *gastric lavage*. In all cases or suspected cases of poisoning, lavage should be done immediately. There are certain exceptions to this rule. These exceptions are in patients who have consumed lye, ammonia, acids, strong alkalies and phenol. It is also to be avoided in the unconscious or convulsing patient. In the former group it is avoided because the danger of perforation of the esophagus and in the latter group because of the danger of aspiration during the procedure. It is the opinion of the author that lavage should also be avoided in hydrocarbon ingestion such as kerosene and fuel oil because of the increased incidence of bronchial pneumonia following this procedure. The technique of gastric lavage is a simple and well-known one. However a few points are worthy of emphasis:

1. Put child in Trendelenburg position.
2. The larger the tube passed, the easier and quicker the procedure.
3. Suction mouth and nasopharynx frequently during procedure to prevent aspiration.
4. Use small amount of lavage solution at a time—50 to 100 cc. maximum. Repeat for total of 1 liter.

If the desired solution is not available, one should not delay the procedure. It is wiser to use water than lose valuable time. Before the tube is withdrawn, the specific or universal antidote is placed in the stomach. The tube should be pinched before its withdrawal to prevent possible aspiration of the material from the tube into the trachea.

When there is a long time-interval between the ingestion of a poison and the starting of therapy, it is possible that much of the toxic material will have already been absorbed into the blood stream. Also there are certain poisons and toxic products of poisons that tend to remain in the blood stream in contrast to becoming fixed or deposited in the body tissues. It is in situations such as these that *exchange transfusions* may have great value. A specific instance is in salicylate poisoning. When the child is comatosed and/or the blood salicylate level is 65 to 70 mg. per cent, exchange transfusion should be considered. Another indication for considering exchange transfusion is in severe methemoglobinemia as in the result of ingestion of analine dyes or nitrates.

Antidote.—When one turns to one's therapeutic armamentarium in search for an antidote for a certain poison, one suddenly realizes there is not an effective antidote for every known poison. As a matter of fact, specific antidotes are relatively few. It is not the function of this discussion to list the various antidotes for the various poisons but rather to re-emphasize a well-known fact. With the plethora of pharmaceutical products, proprietary products, patent medicines, household substances that are now available to the public, it has been estimated that there are approximately 250,000 trade names of such substances on the market today and this number is increasing daily. With this great number of products it is impossible for the practicing physician to be adequately informed as to the contents of each and every one of these, and to add to this dilemma, the labeling of these packages is often inadequate or lists long complex chemical names with which the average physician is not familiar. When the ingredient of the material ingested is unknown, adequate treatment for poisoning of course becomes more diffi-

POISON CONTROL CENTER
FEderal 9-7751
On weekends, holidays, and after 5:00 p.m. call
FEderal 9-1411

cult. In order to solve the physician's dilemma in this situation, poison control centers have been set up throughout the entire United States. It is to these centers that the physician can turn for help. It is from these centers that the physician can obtain accurate knowledge and information as to the ingredients of the product that has been swallowed and also information as to the specific antidote, if any, and recommendations regarding additional treatments to be given in the particular case under question.

When no specific antidote is available or when the nature of the poison is unknown, the use of the universal antidote is indicated. This should be placed in the stomach before the removal of the lavage tube, if possible.

Supportive Care.—Close observation of all patients who have ingested poisons is imperative regardless of the initial therapy. Hospitalization for at least a twenty-four-hour period is advisable for delayed action (shock, electrolyte imbalance, cyanosis, et cetera) may follow in spite of what may seem adequate therapy at the time. The judicious and propitious use of oxygen, blood, electrolytes, stimulants and analgesics may not only be lifesaving but will also render the patient more comfortable.

Poison Control Center

A poison control center is primarily an information center, a point where a current index is compiled and maintained that lists the constituents of all proprietary products, patent medicines, home remedies and household articles. In addition to this, the poison control center keeps abreast of the latest treatment and antidotes to be used in specific poison cases. This information is available on call of any physician or hospital. Some readers will recall that in 1957 at the Minnesota state medical meeting in St. Paul, the Minneapolis chapter of the American Academy of Pediatrics proposed the poison control center for the state of Minnesota. It is my pleasure to inform you that this poison control center is now in existence. Through the combined efforts of the Minnesota chapter of the American Academy of Pediatrics, the Department of Pharmacology of the University of Minnesota, the city Health Departments, our Minnesota State Health Department, and the Minnesota State Pharmaceutical Society, the mother center of the Minnesota Poison Control Center has been established. It is in conjunction with the Minnesota State Board of Health. Within six months, substations of this poison control center will be established throughout the entire state of Minnesota.

At the present time, all inquiries relative to poisoning may be directed to the mother poison control center at the Minnesota State Board of Health. This center can be reached by calling FEderal 9-7751. The center is in operation twenty-four hours a day. Special credit must go to Dr. Warren Lawson, medical director of the poison control center, and also to Dr. Raymond Beiter and Dr. Harold N. Wright, professors of pharmacology at the University of Minnesota. These three men make the Minnesota's Poison Control Center function.

A discussion of poisoning in children is not complete without emphasis on its prevention. Although significant advances in prevention have been made by organizations such as the National Safety Council, the American Academy of Pediatrics, the various life insurance companies, the State Board of Health, the campaign for the prevention of poisonings can and must be brought directly to the office of the individual physician. He can and should become the most ardent campaigner for this cause. He can awaken the parents to the possibility of poisonings in the home. He should lay the facts before the parents—the morbidity, the mortality and the serious sequellae. He must underscore that 99 per cent of accidental poisonings are due to the neglect of the parents. A child cannot read the poison label. Specific instructions by the physician to the parents to carry out a household inspection on their arrival home will be rewarding. The gospel of prevention should be given when the child begins to crawl, or preferably before. The physician may enhance the prevention program in another way. He can discourage the use of candy-like medications such as aspirin, advise against the use of over-the-counter and devious home remedies. The physician as an individual and the physician in an organized society can and should express his desire to the pharmaceutical companies for a safer packaging of their products.

Treatment of Cardiac Emergencies

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Cardiac emergencies appear under a variety of circumstances and frequently require recognition and treatment without the use of technical aids.

The author enumerates the clinical indications and contraindications as well as the mechanism of action of appropriate drugs in arrhythmias, circulatory arrest, acute left ventricular failure, acute myocardial infarction and cardiac tamponade.

CARDIAC emergencies are commonly encountered in practically all segments of clinical medicine. Fortunately, with the exception of circulatory arrest, instantaneous action is rarely necessary. Prompt attention is certainly the rule, but not before adequate evaluation and accurate diagnosis. Some potentially emergent states are self-terminating; some may persist for days without harm to the patient—as with atrial tachycardia in the absence of serious heart disease; others require prompt and dramatic maneuvers.

The ability to arrive at a prompt and accurate diagnosis is not enough. The physician must be equipped to institute appropriate therapy apart from the confines of a hospital unit. Many emergencies must be managed initially in the home. Every physician exposed to this possibility must keep the necessary agents at hand.

The conditions most frequently encountered as emergencies are the cardiac arrhythmias, circulatory arrest, acute left ventricular failure, acute myocardial infarction and insufficiency and cardiac tamponade.

Cardiac Arrhythmias

The gravity of the presenting arrhythmia is dependent for the most part on the ventricular rate and the underlying cardiac status of the patient. Some arrhythmias are benign while others are of the utmost significance. Specific diagnosis is essential to the appropriate and individualized management of the arrhythmia.

Extrasystoles.—Frequent premature contractions are commonly seen in a normal heart. In association with acute myocardial infarction, extremely frequent or multifocal extrasystoles may warn of a serious emergency to follow, such as a ventricular tachycardia. Oral medication, even in this situation, should suffice. Quinidine 0.2 gm. or procaine amide hydrochloride (Pronestyl) 250 mg. four to five times daily is usually adequate but should be increased to twice this dosage if the extrasystoles are not controlled.

Paroxysmal Auricular Tachycardia.—This condition is frequently well tolerated except in the presence of serious organic heart disease and the extremes in age. It is usually self-limited and in most instances will revert before specific therapy can be instituted. It is usually alarming to

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the patient and deserves prompt medical attention. Reflex vagal stimulation through carotid sinus pressure will often produce prompt cessation of the attack. This maneuver may be hazardous in elderly patients in whom drug therapy with quinidine or digitalis becomes the treatment of choice. Simple sedation with sodium pentobarbital affords adequate therapy in many uncomplicated incidences where the urgency is not great. Intravenous cedilanid 1.2 to 1.6 mg. or digoxin 0.5 mg. and 0.25 mg. every two hours to a dose of 1.5 mg. affords the most dramatic form of therapy and is frequently followed by prompt conversion. This is particularly true in infants when a dose of 0.5 mg. cedilanid is frequently used. Oral digoxin with an initial adult dose of 1.0 mg. and twenty-four hour dose of 2.0 to 3.0 mg. may be used in less urgent situations. Quinidine sulfate is used as the treatment of choice in the elderly patient by some clinicians. It should be employed in all patients who do not convert with the above-mentioned measures in the absence of distinct contraindications to the use of quinidine. The oral route is preferred; the condition of the patient may demand the parenteral route. An oral dose of 0.4 gm. every three hours is commonly employed, the total dose varying according to the tolerance of the patient. The intramuscular dose is the same as the oral. In critical instances the intravenous route is employed. Quinidine lactate, 0.65 gm. diluted in 100 cc. 5 per cent glucose, administered at a rate of 2 cc. per minute may be given. The electrocardiogram is used as a monitor during the infusion which may be stopped with signs of toxicity. Pronestyl has enjoyed considerable popularity but evidence does not support these views, particularly in auricular tachycardia where quinidine remains as the preferred drug. Pronestyl has approximately one-third the potency of quinidine and must be used in comparatively larger doses. Its place is more clearly established in ventricular tachycardia.

Pressor drugs, probably through their ability to cause reflex vagal stimulation, play a lesser role but may be tried when more conventional methods fail. Intravenous neosynephrine 0.5 mg., nor-epinephrine, methoxamine hydrochloride (Vasoxyl) and mephentermine sulfate (Wyamine) have all been employed. The drastic side effects of mecholyl makes its use extremely limited.

Auricular tachycardia may be encountered in association with atrio-ventricular block, this commonly as a manifestation of digitalis intoxication. Digitalis should be discontinued immediately in this situation as well as in other arrhythmias occurring as a consequence of digitalis. A potassium salt, orally, as a single dose of 3 to 5 gm. or parenterally in a concentration of 80 to 100 m.Eq. per liter given at a rate of 0.5 to 1.0 mEq. per minute is used to counteract the digitalis intoxication.

Both quinidine and pronestyl are strongly contradindicated in the presence of any form of atrio-ventricular block. They are capable of depressing an ido-ventricular rate and causing ventricular fibrillation.

Auricular Flutter and Fibrillation.—The gravity of the clinical state is for the most part dependent upon the ventricular rate in both auricular flutter and fibrillation. They constitute an emergency only when the degree of A-V block allows a rapid ventricular rate. Emergency therapy consists of slowing the ventricular rate by increasing the A-V block with digitalis, the route determined by the degree of the emergency. Quinidine may be employed subsequently if the digitalis fails to convert the heart to a normal rhythm.

Ventricular Tachycardia.—Ventricular tachycardia is most frequently seen as a complication of acute myocardial infarction and may be seen as a manifestation of digitalis intoxication or anoxic states. Paroxysmal ventricular tachycardia is quite unusual.

The clinical status of the patient may allow oral therapy. Quinidine sulfate in a dose up to 0.6 gm. every two hours to a total dose of 3 to 4 gm. is not uncommonly used. The intramuscular route can be used, employing the same dose schedule when the oral route is not possible. Some clinicians prefer Pronestyl for use in this arrhythmia. The merits of each seem to be quite comparable in this situation when used in a comparable dose as described.

The occurrence of ventricular tachycardia in association with acute infarction presents a grave situation and demands immediate therapy. Parenteral Pronestyl or quinidine is preferred. In spite of the frequent occurrence of hypotension with intravenous pronestyl in effective doses, it is preferred to intravenous quinidine by many

authors. It is used in a dose of 0.1 gm. per minute to a dose up to 1.0 gm. Intravenous quinidine given as previously described may be used as the emergency demands, but cannot be given without assuming the risk of creating a more urgent situation. Neither quindine nor pronestyl should be used when an atrio-ventricular block is known to exist.

Circulatory Arrest

Carotid Sinus Syncope.—Such episodes consisting of extreme bradycardia or standstill are usually of short duration spontaneously terminated before any therapy can be instituted. An attempt at prevention of recurrent attacks with anti-cholinergic drugs forms the usual basis of therapy.

Complete Heart Block and Stokes-Adam Syndrome.—Complete heart block may be associated with syncopal attacks, these usually due to paroxysmal ventricular fibrillation or asystole. Occasionally persistent ventricular tachycardia may be the mechanism. Determination of the mechanism is of utmost importance since beneficial therapy in one instance may be deleterious in another. Fortunately many attacks terminate spontaneously.

The use of quinidine and Pronestyl is contraindicated because of the possibility of converting an idioventricular rhythm to a cardiac standstill. In ventricular asystole, mechanical stimulation by pounding on the chest should be tried immediately. Intracardiac adrenalin, 1 cc. of 1:1000 dilution, may be given if death appears likely. With ventricular tachycardia or fibrillation, adrenalin is of no value and may well be harmful. Treatment of paroxysmal ventricular fibrillation is quite unsatisfactory. Intravenous isopropylarternol hydrochloride (Isuprel) has been of apparent benefit in cases where ventricular tachycardia is the cause of the syncopal attack. Isuprel intravenously or sublingually has been helpful particularly in the prevention of syncopal attacks by increasing a slow idioventricular rate and thereby decreasing the likelihood of recurrent fibrillation. Rarely an attack will occur with simple slowing of the basic rate and may be effectively handled with Isuprel administered by either route. The effective use of molar lactate in the prevention and treatment of cardiac standstill has also been described.

The most rational form of treatment in asystole is the externally applied electric pacemaker. It is of no value in ventricular fibrillation. This should be used at the onset of asystole as the treatment of choice when available. Externally applied electric counter shock has been used as a defibrillating mechanism as described by Zoll.[1,2]

Direct cardiac massage has enjoyed undue popularity in the recent past. In the hands of the inexperienced and under poor conditions, such a maneuver is certain to produce disastrous results. The benign course of a syncopal attack about to terminate spontaneously could well be fatally altered by a thoracotomy. Direct massage is inadvisable unless the patient is in the operating room or can be moved there directly. The situation must be carefully weighed before such a hazardous procedure can be undertaken.

Cardiac Arrest.—As used here, cardiac arrest will not include the afore-described Stokes-Adams syndrome but will include arrest accompanying surgery. Prophylaxis through adequate preoperative preparation of the patient and careful anesthetic control are important. Hypoxia, changes in acid-base balance and underlying cardiac disease are all important etiologic factors. Atropine in adequate dosage is used to suppress excessive vagal stimulation.

The two purposes of emergency treatment are the establishment or re-establishment of an adequate oxygen system and the restoration of the heart beat. While the airway is being established and 100 per cent oxygen delivered, external cardiac stimulation by pounding on the chest or attempted massage through the diaphragm when the abdomen is open is employed. However, with only minimal delay, the chest is opened and direct cardiac massage instituted. The electric pacemaker is ideal for standstill. If this is unavailable, massage is continued. Intracardiac adrenalin may be tried after several minutes of massage. Should the ventricle be found to be fibrillating, massage followed by electric shock for defibrillation is employed. Asystole following defibrillation must be managed as just described.

Acute Pulmonary Edema

Acute left ventricular failure with pulmonary edema is commonly encountered as a medical emergency. It is usually associated with hypertensive cardiovascular disease, valvular heart disease or in association with myocardial infarction. Many will be treated initially or entirely outside the confines of a hospital unit.

Simple measures employed early will do much to ease the distress. The patient should be placed in a sitting position with the legs dependent. Morphine sulfate, usually in a dose of 16 mg. intramuscularly, frequently produces dramatic relief. Care must be taken in advanced pulmonary disease such as pulmonary emphysema when meperdine hydrochloride (Demerol) is better tolerated. Tourniquets may be applied to all extremities to effect further pooling of blood when the earlier measures have not sufficed. These tourniquets are applied to occlude the venous return but not the arterial flow. Intravenous aminophyllin will relieve bronchospasm in many instances. The patient should be digitalized promptly with one of the rapid acting preparations such as desacetyllanatoside C (Cedilanid D) or digoxin as described under cardiac arrhythmias. Mercurial diuretics will be of delayed benefit. These measures can all be easily instituted in the home and frequently will suffice to control the current emergency.

When hospitalization is required because of inadequate response or complicating circumstances, inhalation of oxygen with an aerosol of antifoaming agent is indicated. Thirty per cent ethyl alcohol placed in a humidifier or nebulizer is recommended. A positive pressure breathing apparatus may be of additional help in the more acute states. Occasionally when the venous pressure is high and distress acute, a phlebotomy of 600 to 800 cc. becomes necessary to initiate the return to compensation. This is not advisable in states of shock or acute infarction.

Myocardial Infarction

Acute myocardial infarction presents an extremely variable picture with treatment varying accordingly from conservative observation to intensive emergency medical management. It is generally agreed that the patient should be hospitalized where absolute bed rest can be enforced. Pain should be relieved promptly with an opiate such as Demerol or morphine. The dose will vary with the patient and the severity of the pain. When the pain is severe, Demerol given slowly (intravenously) may be used until the desired effect is obtained. Oxygen should be used during the early days if any significant distress is apparent. It frequently helps to alleviate pain and generally improves the status of the patient. The mask is more effective but should be replaced with a tent if undue apprehension is apparent. The controversy over anticoagulant therapy need not enter into this discussion since it is not a part of emergency care.*

Congestive heart failure, cardiac arrhythmias and shock are the chief serious complications of acute infarction. Congestive failure and the arrhythmias are treated as previously discussed. The mortality increases sharply in the presence of shock in spite of prompt medical attention. Various pressor drugs are now available. Mephentermine sulfate (Wyamine) in large intravenous doses has been shown to be effective. Forty-five to 60 mg. are given at once followed by an infusion of 300 to 600 mg. in 500 cc. 5 per cent dextrose in water. Aramine bitartrate used both by the intramuscular and intravenous routes has been very useful. Norepinephrine has been used extensively as a slow intravenous drip with 4 to 16 mg. in 1000 cc. 5 per cent dextrose given at a rate necessary to restore normal blood pressure. It has the disadvantage of requiring constant professional observation. Severe ischemic reactions with sloughing have occurred secondary to subcutaneous infiltration. Too frequently, the response to pressor agents is a transitory one followed by a state of non-responsive shock and death. However, their use has undoubtedly made recovery possible in some otherwise hopeless situations.

Cardiac Tamponade

Tamponade is very frequently caused by hemopericardium as a terminal event secondary to rupture of the heart or dissection of the aorta. However, exudation, transudation or controlled bleeding may produce serious cardiac tamponade relieved by draining of the pericardial sac. This can be performed without great difficulty by needle aspiration through an anterior approach. The relief of symptoms can be dramatic. Direct surgical drainage carries very little risk today and has the advantage of making a pericardial sac biopsy available.

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*Editor's Note: A number of cardiolgists feel that it should be used in the acute stage of the disease.

Emergency Diagnosis of Unconsciousness

HERBERT F. R. PLASS, M.D.
Minneapolis, Minnesota

CERTAIN large institutions receiving great numbers of patients have had the wide experience needed to tabulate some of the causes of unconsciousness met with as emergencies. I have not hesitated to borrow freely from all sources which could give me help, and the rules in effect in city hospital emergency rooms have proven to be most useful.

In the first place, the practicing physician is able to sort out many patients whose unconsciousness stems from benign causes, and even to do this to a limited extent on the telephone. The simple faint of an excited girl in a big crowd at a party is cured before the physician arrives. I might add that most of the time, even if I think I know what is the matter with an unconscious patient, it seems better to drop everything and run to the patient if I can. Benign unconsciousness looks like just as much of an emergency as any other kind, and the reaction of bystanders is usually less than calm; the arrival of a doctor at this point may put him at quite a disadvantage as far as the care of the patient is concerned, but it is evidence of good faith and devotion, and we need to make visible as much of this evidence as we can in the present day.

In these simple faints, with patients who are known to us, the history just about makes the diagnosis, and a simple examination made on the spot will confirm it. In what I am about to say, the history and examination are equally important, even though we shall be dealing with more serious troubles. With patients brought to a hospital by ambulance, the history is missing, and if it is not obtained by telephone or from an accompanying relative, one is left to practice veterinary medicine. I intend no slur on my brother practitioners who care for dumb animals, but wish to emphasize the difficulty of the situation we are discussing.

The police are reliable and efficient aids in getting an emergency history when the situation permits and demands their service. They are also wise enough to nose around and hunt for liquor and pill bottles—partially and completely empty. They know where in a menage to find them. One must simply remember not to ask their aid with the wrong patient or family, if offense might be given.

In large published series, the history makes or confirms the diagnosis in eight patients out of ten. These figures include the 60 per cent of all patients having comas which are alcoholic in origin who find their way to city hospitals.

One should try to get information about the type of onset noted, any injury, infections, convulsions, diabetes, headache, heart trouble, kidney trouble, high blood pressure, and consumption of alcohol or other poisons.

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Physical examination must be rapid and thorough. It is not a time to linger over details which are of doubtful aid. On the other hand, listening to the heart to see if it is beating is not an adequate examination either. The color, posture and movements of the patient must be noted. He must be gone over thoroughly for wounds and evidence of injury. This requires the removal of clothes, but I have seen it tried without. One needs to be burned with this kind of fire only once, though, to learn his lesson. Shock must be determined at once, and if it is present, must be treated before anything else is done.

Pupils, optic fundi, ears, nose and throat must be tested and examined. One of the few times I ever played the role of hero was with a patient who had fever, was unconscious, and had a normal spinal fluid demonstrated elsewhere earlier the same day. I looked in his ears and he had a cholesteatoma on the left with a foul discharge. His lateral sinus thrombosis was successfully operated on after a second spinal puncture showed a positive Queckenstedt test on the left, and without question I had helped to save his life.

Odors must be noticed. Alcohol can be detected often on these patients, but the examination cannot stop at that point. Every other cause of coma can occur in an alcoholic patient, and the non-alcoholic can get sick and take a drink because he feels it would be good for him or would make him feel better, only to become unconscious from his illness an hour later. Illuminating gas and acetone have characteristic odors which lead one straight toward diagnoses.

The neck must be tested carefully for stiffness. Heart, lungs and abdomen must be looked over quickly, and their signs evaluated carefully. How can one diagnose a ruptured spleen without an abdominal examination? Or a dissecting aortic aneurysm? Reflexes have to be examined, the rectal glove used, and finally, the general impression of the patient must be summarized at this point before anything else is done. Most of the time the job of diagnosis is now finished, but about a fourth of the time, further information must be had on an emergency basis; this usually requires laboratory and x-ray examinations.

Skull x-rays must be made on all injury cases who are unconscious, unless the patients are in shock. Then they can wait. All patients with obscure diagnoses must have skull x-rays too. A chest film may be done later. Sometimes this will lead one on to an unsuspected tuberculous meningitis.

Where the question of poisoning seems to exist, lavage of the stomach must be carried out efficiently with a large tube and the washings must be saved carefully for diagnostic purposes as well as for legal use later. With many if not all unconscious patients, an inlying nasogastric tube is helpful not only for diagnosis but for treatment, too. The bladder must be catheterized and a complete urinalysis done, as well as a culture made. Many of the Gram-negative bacteremias with shock occur secondary to urinary tract infection or instrumentation. Patients still catheterize themselves. Finding no sugar in the urine does not mean that the patient is not diabetic. If insulin lumps are found on the thighs, the patient may be in insulin shock. Only a blood sugar will determine this.

Hemoglobin, blood smear and white blood cell counts may be needed. If there is fever, or suggestion of infection, a blood culture must be drawn. Severe infection with unconsciousness often produces blood stream infection, and specific treatment requires this information, particularly if the condition has been produced by previous antibiotic treatment.

In the "medical" type of unconsciousness, blood urea nitrogen and Wassermann tests have to be started. Many clinicians recommend determination of amylase and carbon dioxide combining power, as well. In alcoholic patients there is an occasional fulminating pancreatitis presenting as a case of coma.

Finally, one must decide whether a spinal puncture is to be done. It should be routine in all unconscious injury cases unless the patients are in shock, in suspected strokes, convulsions, in the presence of signs of increasing intracranial pressure (such as rising pulse and blood pressure), and when patients have stiff necks, Kernig or Brudzinski signs. And of course, spinal puncture should be done if the diagnosis isn't clear by the time one has reached this point.

Summary

The classical routine for diagnosis of the cause of unconsciousness has been presented once again, in a form so brief as to be almost an outline. Although the routine is approaching half a century in age, very few modernizations are required to make it conform to the best practice today.

Catastrophic Drug Reactions

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MY COLLEAGUES and I have been fortunate in not encountering many catastrophic reactions to drugs. We would like to believe that this is because of certain precautions we have taken over the years. Early frightening experiences with severe status asthmaticus that followed the inadvertent administration of acetylsalicylic acid (aspirin) to patients with asthma and nasal polyps who were sensitive to this commonly used drug led to careful questioning of each patient about this and other drug hypersensitivities. When the history of any drug allergy was obtained, we promptly stamped the words "Drug Allergy" on all parts of the patient's records to alert all concerned not to administer this particular agent; this device worked extremely well. Then, as allergic sensitivity to sulfonamides, penicillin and many other new drugs was encountered, the Mayo Clinic history records were revised to provide a special space in which to record the presence or absence of any known drug allergy and the type and severity of the reaction.

This same information about drug allergy also is recorded on the cards referring the patient to the hospital in order to alert surgeons, anesthesiologists, nurses and the staff generally, so that the offending medicament will not be administered. Each nurse who is about to give a drug to a patient for the first time is instructed to inquire of the patient about previous allergic reactions to the drug.

Before administering contrast mediums intravenously for excretory urography or cholangiography, the physician inquires regarding any allergic diseases and drug reactions, with particular emphasis on sensitivity to iodine or previous untoward experience with intravenous urography. If such a history of sensitivity or serious allergy to iodine exists, the examination is canceled. If no contraindication is elicited, the physician injects 1 or 2 ml. of contrast medium. If a reaction does not occur in about one minute, the remainder of the dose is injected. Similar precautions prevail in the investigation of the cerebrospinal system by means of contrast mediums. We are certain that many potentially serious reactions to drugs, contrast mediums and anesthetic agents have been avoided by these precautions.

Report of Cases

Reliable or safe tests for most kinds of drug hypersensitivity do not exist, and even a careful history will not reveal all potential allergic reactions to drugs. This is illustrated in the following two cases.

Case 1.—A fifty-seven-year-old man seen at the Mayo Clinic in 1946 had passed renal stones once or twice a year during the previous five years. No history of personal or family allergy was elicited. Aside from mild obesity and minimal evidence of gout, results of physical examination were normal.

An ampule of iodopyracet (diodrast) was administered intravenously for study of the renal pelvis and ureters. The patient suddenly became dyspneic and cyanotic. The patient died despite use of artificial respiration and the administration of oxygen.

Although it was not proved, his death was attributed clinically to respiratory failure on an allergic basis. This may not be a valid conclusion, however, inasmuch as three somewhat similar catastrophies during intravenous urography were shown at necropsy to be due in two instances to cerebrovascular accidents and in the other case to coronary occlusion.

Case 2.—A sixty-nine-year-old woman with asthma, nasal polyps and sinusitis gave no history of other allergic conditions, including sensitivity to either penicillin or aspirin. Results of skin tests with inhalant antigens were normal. The surgical construction of bilateral nasoantral windows with polypectomy was carried out without incident or difficulty.

The patient returned to her room after operation in good condition; she was able to get into bed with help, she spoke to her daughter, and her blood pressure was

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120 mm. of mercury systolic and 80 diastolic. Procaine penicillin (300,000 units) was then injected intramuscularly. The patient died within twenty minutes despite artificial respiration and intratracheal administration of oxygen. The heartbeat was not heard. Necropsy disclosed pulmonary emphysema (grade 3), hypertrophic bronchitis and coronary sclerosis (grade 2). Death was ascribed to anaphylactic shock due to allergy to penicillin.

A more insidious yet equally catastrophic reaction to penicillin is illustrated in the next case.

Case 3.—A thirty-nine-year-old housewife came to the clinic in November, 1953, because of asthma, nasal polyps and sinusitis. After construction of naso-antral windows, polypectomy and ethmoidectomy were done, radium was applied within the nose. The patient gave a history of a sensitivity reaction to penicillin G in 1950; therefore, on the assumption then held that cross reaction did not occur between penicillin G and O, penicillin O (1,000,000 units) and streptomycin (0.5 gm.) were given intramuscularly for six days after operation and apparently were well tolerated. At home in December, 1953, the patient again was given penicillin O, together with aureomycin, for pneumonia.

The patient returned to the clinic in January, 1954, and was hospitalized for six days because of erythema multiforme. Sensitivity to iodides was suspected, and this was confirmed two weeks later at home when the dermatitis recurred within hours of taking one teaspoonful of an iodide mixture.

Asthma recurred in February, and she was hospitalized for two weeks at her home town, where she received penicillin O, cortisone and other supportive measures. Evidence of polyneuritis appeared; the calves became painful, and burning, swelling and edema of the feet developed, followed by purpura and ecchymosis on the legs, arms and trunk.

In March, 1954, the patient returned to the clinic because of asthma, swollen hands, feet and joints, and purpura. The eosinophils in the peripheral blood comprised 55 per cent of the leukocytes. The erythrocytic sedimentation rate was 55 mm. during the first hour (Westergren method). There was no fever. Scratch and passive-transfer tests with penicillin gave negative results. The neurologic diagnosis was symmetric polyneuritis of allergic type. Muscle biopsy revealed the findings of periarteritis nodosa. Bone-marrow studies showed severe eosinophilia and perivascular cuffing with plasma cells.

Despite supportive measures and use of cortisone, the course was downhill. Tachycardia, hypertension, weakness, hematuria, pyuria, deep muscular aching, severe abdominal pain and a stiff neck were outstanding. Disorientation and hallucinations were terminal symptoms one month later. Necropsy revealed periarteritis nodosa (necrotizing arteritis), small zones of hemorrhage in the intestine, kidneys, liver, lungs, spleen and heart, and large areas of hemorrhage in the brain and behind the stomach. The lungs showed bronchitis and bronchiectasis. The adrenals were atrophic.

One must conclude either that cross sensitivity was present between penicillin G and penicillin O or that hypersensitivity to penicillin O developed during the course of its several administrations. Although hypersensitivity to iodide was demonstrated in this patient, none was given during her last three months.

Reporting a nationwide survey of severe reactions to antibiotics, Welch[1] compiled a total of 1,072 reactions that were classified as being threatening to life, including among others 809 with anaphylactic shock, seventy severe cutaneous reactions, forty-six blood dyscrasias and thirty-eight cases of angioneurotic edema with cerebral or respiratory involvement; 1,925 reactions were classified as not threatening life. The preponderance of reactions followed administration of penicillin.

Bronchoscopy of patients with asthma is occasionally necessary but it is not always without hazard, as illustrated in the following instance.

Case 4.—A fifty-two-year-old housewife previously had had nasal polypectomy. She came to the clinic because of asthma requiring hospitalization. No history of previous drug allergy was obtained. One month previously, corticotropin (ACTH) and prednisone (meticorten) had been administered for one week. A leukocytosis of 17,900 cells per cubic millimeter of blood, with 11.5 per cent eosinophils, was present. Results of skin tests showed sensitization to cow dander and house dust.

In preparation for bronchoscopy, 75 mg. of meperidine (demerol) hydrochloride was administered, after which the throat was sprayed with 3 ml. of a 2 per cent solution of tetracaine (pontocaine) hydrochloride and the pillars were painted with 2 ml. of a 10 per cent solution of cocaine; an equal amount of cocaine was then instilled in the trachea. The patient appeared to choke on the anesthetic material, and extremely severe asthma developed immediately, with pronounced anoxia and rapid unconsciousness. A dose of 0.5 ml. of epinephrine was given intravenously and 1 ml. also was administered intramuscularly; 50 mg. of hydrocortisone (solu-cortef) with 0.5 gm. of aminophylline also was given intravenously. This was followed by a return of consciousness and gradual recovery.

Sensitivity to pontocaine may be inferred to have been present in this instance, because five days later, after demerol sedation and with cocaine anesthesia, the patient withstood without incident the removal of a large number of polyps from both ethmoid regions, thorough ethmoidectomy, and removal of part of the cystic polypoid left middle turbinate. Both sphenoids and the right antrum were filled with dried mucopus. A right

antral window was made. In preparation for both bronchoscopy and the intranasal operations, the patient was given the usual preoperative course of cortisone customary for patients who have had previous recent steroid therapy.

The final case, which has been reported previously in greater detail,[2] illustrates a different type of catastrophic reaction to a drug, namely arsenic given in the form of Fowler's solution for the treatment of asthma.

Case 5.—A thirty-four-year-old farmer was admitted to the hospital in June, 1952, because of asthma for which he had been taking a solution containing 5 gm. of arsenic per liter. On arrival he was stuporous and delirious; a stiff neck was present, with bilateral Babinski's signs. Cyanosis, wheezing rales and rhonchi were present. He was sweating and dehydrated. His temperature was 101.2° F. The urine contained 0.4 mg. of arsenic per liter. The cerebrospinal fluid was under increased pressure (480 mm. of water) and contained 8,000 erythrocytes per cubic millimeter.

His course in the hospital was stormy, but he responded to treatment, which included British anti-lewisite (BAL), ACTH, penicillin, oxygen and the usual antiasthmatic remedies. Ten days after admission, it was noted that he was practically blind. Nine months later, his vision had improved sufficiently that he could read large letters, but he could distinguish only dark colors. Other less serious residuals from the hemorrhagic encephalitis also were present.

Treatment of Catastrophic Drug Reactions

The physician must be ready at all times to treat allergic drug reactions quickly and effectively. Fortunately, the agents most needed to cope with such emergencies are to be found in most physicians' bags. Unfortunately, these agents are not always assembled and immediately available in hospitals and clinics. Therefore, Lofgren and I[3] have proposed and prepared emergency sets to combat anaphylaxis. These sets are placed in strategic locations in the Mayo Clinic, the Rochester hospitals, and in the research and physiology departments where one is most likely to encounter anaphylactic reactions. The sets contain two 1-ml. ampules of epinephrine (1:1,000), two ampules of aminophylline (grains 3¾ [0.25 gm.] each), one 1,000-ml. bottle of a 5 per cent solution of dextrose in distilled water, one 10-ml. ampule of diphenhydramine (benadryl) hydrochloride (10 mg. per milliliter) and one bottle of hydrocortisone (100 mg.), together with various syringes, long and short needles, scalpel, hemostat, suture material, alcohol, sponges and a set for the intravenous administration of fluids. Other items of an emergency nature could be included but have been omitted since the primary objective is to be ready to treat anaphylactic reactions adequately and promptly. Oxygen (tank and mask) is also important and is readily available in the clinic and the hospital areas already mentioned. Most reactions encountered are mild and respond to injections of epinephrine and oral antihistaminic therapy.

Penicillinase, an enzyme that promptly neutralizes penicillin *in vivo,* is also available but has not been tested by us. Because it is said to have sensitizing potentialities,[4] its use perhaps should be reserved at present for major reactions to penicillin until its safety can be further studied.

Comment

Lofgren and I[3] emphasized the importance of catastrophic reactions in 1956 as follows:

"Minutes count when one is confronted with a severe anaphylactic reaction such as may follow the administration of drugs, serums, antigens, antibiotics, local anesthetics, dyes, and contrast mediums to which a patient may be hypersensitive, or such as may follow the bite of a wasp, yellow jacket, or bee to whose venom a patient is similarly hypersensitive. The suddenness, unexpectedness, and severity of the reaction are most likely to find the physician unprepared to cope with it promptly and adequately. The anaphylactic reaction may take different forms, all of which are potentially serious and include choking, cyanosis, apnea, status asthmaticus, syncope, shock, convulsions, stupor, and generalized urticaria and angioneurotic edema. The patient may die."

Conclusions

It is best to avoid giving a patient any drug to which he is known or suspected to be sensitive. Adequate tests for drug allergy do not exist. One must have ready and assembled in appropriate areas in clinics and hospitals all the medicaments and instruments necessary to combat without delay any type of reaction to drugs.

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Non-penetrating Trauma to the Liver

Discussion and Report of Three Cases

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With the increase in number of accidents, physicians will be confronted with more liver trauma. Early recognition and treatment will reduce mortality and morbidity, according to the author. Clearly and concisely written, this article is recommended reading for all medical practitioners.

INJURIES to the liver can be divided into two classes: the closed, non-penetrating, crush or "fracture" wounds; and the open or penetrating wounds. No attempt will be made herein to deal in detail with penetrating injuries, although the remarks regarding therapy are in general applicable to both types. Non-penetrating injuries are relatively infrequent. Sparkman and Fogelman in 1953 reported 100 cases of hepatic injury, eight of which were non-penetrating.[1] Of the eighty-one cases reported by Madding in 1955 from a city-county general hospital, 20 per cent were of the closed type.[2]

In contrast to penetrating injuries, where the mechanism of injury, such as bullet wound or knife, is obvious, the non-penetrating injuries of the liver have a more obscure etiology ranging from crushing of the body to simple falls, as will be illustrated later. Many of these severe visceral injuries are the result of traffic accidents which destroy almost 40,000 lives each year and produce an additional 1,350,000 less-than-fatal injuries.[3] The importance of the motor car in creating severe trauma to the human body has been analyzed by Zollinger[3] who studied emergency room cases for one year and found that although traffic injuries were the cause of only 8 per cent of the emergency room visits, 25 per cent or one in every four traffic injuries required hospitalization—three times the average hospitalization rate for other emergency room cases.

That injuries to the liver prove a serious therapeutic problem is illustrated by a review of mortality statistics over the past thirty-five years as shown in Table I. The striking decrease in mortality during recent years reflects many factors, including the use of surgery, liberal employment of whole blood, advances in anesthetic methods, use of antibiotics, and the better appreciation and treatment of the combined thoracoabdominal injury.

Diagnosis

As mentioned earlier, the diagnosis in cases of penetrating injury is usually obvious or suspected enough to dictate immediate exploration. However, in the non-penetrating injuries the diagnosis may be very difficult. There are no pathognomonic signs and symptoms, and evidences of intra-abdominal injury may be delayed for several hours. This dangerous delay has been referred to as the "period of illusion" by Penberthy and Reimer.[4] In large, deep fracturing wounds of the liver, the signs of rupture are mainly those of shock, blood loss, and peritoneal and diaphragmatic irritation. Tenderness and distention with some rigidity are common. The absence of bowel sounds is an important sign, and auscultation of the abdomen should be a routine step in the examination. Fever and rising leukocyte count, in the absence of other explanation, should suggest liver injury with blood and bile in the peritoneal cavity. In case of a subcapsular hematoma, as in Case 2, a tender, enlarged liver may be palpable. With a central liver rupture, bleeding may occur into a large bile duct and make its appearance as bloody vomitus or stool.[5] Careful, repeated clinical examination in the suspected cases will be of greatest value.

X-rays of chest and abdomen may be helpful but usually are not. Peritoneal needle aspiration

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TABLE I. MORTALITY RATES IN WOUNDS OF THE LIVER

Year Published	Period of Report	Source	Type of Injury	Number of Cases	Mortality Rate
1918	WW I	U. S. Army	All types	?	66.2%
1931	1900-31	Gen hospital	Non-penetrating	24	66.6%
1939	1915-37	Gen hospital	Non-penetrating	60	68. %
1941	1931-41	Gen hospital	Non-penetrating	100	81. %
1946 (5)	1944-45	U. S. Army	All types	829	27. %
1947	Prior to 1947	Gen hospital	All types	26	30. %
1953 (8)	1946-53	Gen hospital	All types	100	10. %

Abridged from Sparkman and Fogelman: Wounds of liver—a review of 100 cases. Annals of Surgery, 139: 692, 1954[1]. J. B. Lippincott Company. By permission.

is a valuable diagnostic tool (Case 1) but must be used with judgment and care and not as a substitute for other methods of examination.[6]

Little has been said thus far with regard to those serious and complex injuries which may be associated with liver trauma, but the frequency

TABLE II. EFFECT OF MULTIPLE INJURIES ON LIVER INJURY

(829 Cases)

	Mortality Rate Per Cent
Liver uncomplicated	9.7
Liver plus one other organ	26.5
Liver plus two other organs	39.7
Liver plus three other organs	54.8
Liver plus four or more other organs	84.6

Madding, G. F.: Injuries of the liver. A.M.A. Arch Surg., 70: 748, 1955[2]. Published by A.M.A. By permission.

of multiple injuries, especially those of chest, brain and abdomen, which accompany extensive trauma are well-known to all of us. In the space allotted, we cannot explore the various complications of such multiple injuries but Table II illustrates graphically the effect of multiple injuries upon mortality.

Treatment

Because the patient may exhibit no external evidence of injury, the basic approach in treatment emphasizes thorough, careful, and repeated examinations, and hour-by-hour observation while the diagnosis remains in doubt. Repair of the damage to the liver will be tempered by complicating injuries to the head, chest, and extremities and the routine resuscitative and supportive measures—including oxygen, whole blood, and correction of respiratory obstruction—should be employed. If vomiting or other signs of intra-abdominal injury are present gastric suction should be instituted. An indwelling urethral catheter will assist in providing accurate measurement of fluid losses. Associated injuries must be evaluated and treated in the order of their importance. If abdominal exploration is decided upon, adequate amounts of whole blood must be at hand. Endotracheal anesthesia should be employed in the event that the thoraco-abdominal approach is decided upon. Relief of pain with the use of morphine should be cautious because of the masking effect of the narcotic and the possibility of extensive liver damage altering the detoxification rate.

The definitive treatment of liver injuries is surgical since from even small hepatic wounds large amounts of blood and bile may drain. Associated intrathoracic injuries may be corrected at the same time, thus the thoraco-abdominal approach may be considered.[7] The vertical paramedian incision provides adequate exposure for exploration of the upper abdomen and the transverse abdominal incision also has the advantage of ease of extension if associated injuries, such as rupture of the colon or spleen, are found. The posterior approach through the bed of the twelfth rib provides the best access to the posterior surface of the liver and drainage of the subphrenic space.[8]

Upon opening the peritoneal cavity, one will occasionally find no gross evidence of liver injury; there will be no free blood or bile present. In such an instance, careful inspection and palpation of the entire liver should be performed searching for a subcapsular rupture which should then be opened and drained. The posterior peritoneal surface of the abdomen should also be visualized for signs of injury and concealed hemorrhage. Usually the operator will find the peritoneal cavity filled with blood, both liquid and clotted. This blood should be aspirated quickly and carefully measured to aid in the estimate of blood replacement. However, this blood should never be used for auto-transfusion purposes since it may contain bile and necrotic liver tissue. After removal of the blood, inspection of the liver will usually reveal the damage and no active bleeding will be found. This absence of active bleeding from the liver wound at the time of exploration is of interest and has been noted by several authors.

Only 9 per cent of the cases reported by Madding[2] and none of the three cases included in this report showed active bleeding at the time of exploration. Usually there will be a slow oozing of blood from the vital liver tissue but this tends to stop rapidly by clot formation. The most effective control of hepatic hemorrhage can be obtained by the use of deep sutures of coarse catgut but the operator should recognize the disadvantages of such sutures which may produce segmental necrosis or create a closed cavity with subsequent abscess formation.

When confronted with rapid bleeding, an attempt at the suture control may be necessary, accepting the hazards of necrosis and attempting to provide adequate drainage for the subsequent necrotic liver tissue. Furthermore, suturing is often difficult in the presence of extensive fragmentation of the liver tissue and especially in those inaccessible fractures of the posterior and superior surfaces of the liver. Temporary control of rapid hemorrhage from the liver can be attained by inserting the index finger through the foramen of Winslow and compressing the portal vein and hepatic artery between the thumb and index finger. Almost all authors[1,2,9] now agree that the gauze pack so popular in the past should never be used unless absolutely necessary to control bleeding uncontrollable by any other means. The gauze pack acts as a tampon blocking adequate drainage, promoting necrosis and pocketing of bile and exudate.[5] In combined thoraco-abdominal injuries where the diaphragm has been sutured the gauze pack may cause bile and other materials to seek exit through the pleural space via the sutured diaphragm, leading to bile pleuritis, empyema, and broncho-pleural fistula. Aside from the discomfort of its removal, which usually requires the imposition of another general anesthetic upon an already desperately ill patient, gauze packs are reported in association with such complications as intrahepatic necrosis and abscess, hemorrhage following its removal, et cetera. Similarly, the use of so-called "absorbable" agents such as "gelfoam" and "oxycel" should be avoided since they may delay hepatic healing and act as foreign bodies.[9]

It is also generally agreed that all macerated or devitalized fragments of the liver should be removed in order to prevent the sequence of necrotic liver tissue, infection, and sequestration.[10] If a large portion of a lobe is incompletely amputated by the injuring force, it is probably wiser to complete its resection and rely on the functional reserve of the remaining hepatic tissue. If a subcapsular collection of blood and bile is found, the capsule should be opened and a careful search made to locate the area of greatest hepatic injury, in order that the devitalized tissue may be removed and the drains be placed in the correct position.

Madding has stated that the establishment of adequate external drainage of both bile and the products of tissue injury is the most important feature of the surgical care of liver wounds. Sparkman and Fogelman state that while hemorrhage constitutes the principal immediate threat to life, the most frequent complications are those related to infection, liver necrosis, and inadequate drainage. As in all surgical infections, dependent drainage should be the goal, and the use of several large soft rubber drains brought out through the flank or through the bed of the twelfth rib should be employed. The drains should be brought out through a wound large enough to admit the operator's two fingers with ease and not through the ordinary small stab wound. Large fragments of liver tissue may be expelled along the drainage tract and the drain opening should be large enough to permit adequate drainage and adequate digital exploration of the wound during the postoperative period.

Postoperative Care

The postoperative care of these injuries is largely a recapitulation of the principles already stated. Whole blood should be replaced as rapidly as necessary and measurement of the quantity of blood removed from the peritoneal cavity in the operating room will aid in estimating the quantity to be replaced. Gastric suction will be necessary until the postoperative ileus runs its course. Fluid requirements should be carefully calculated and urine output measured at hourly intervals until adequate urine output has been established. Initial antibiotic therapy should include penicillin and some broad spectrum agent, and it seems wise to administer a well-tolerated broad spectrum agent until drainage ceases or until a firm drainage tract or fistula establishes itself. The most important objective in the postoperative period is to maintain adequate drainage from the injured liver tissue until all of the necrotic material has been expelled. Beginning

on the third or fourth postoperative day, the surgeon, using aseptic technique with sterile gloves, should explore the drainage opening with the gloved fingers, and this procedure should be done daily or every other day until drainage ceases and the wound closes by growth of fibrous tissue. Irrigation of the drainage tract and wound edges with aqueous zephiran will aid in removing the thick mucoid drainage from the liver wound. Ambulation may be instituted as soon as the patient's condition will permit and a high calorie, high protein diet supplemented by the vitamins is given as soon as possible. The keystone of care in these cases is careful, continuous observation for evidences of inadequately drained pockets of necrotic tissue. Repeated, over-exposed roentgenographs of the subphrenic area may be of especial value in the patient whose course of fever and toxicity suggests an occult abscess.

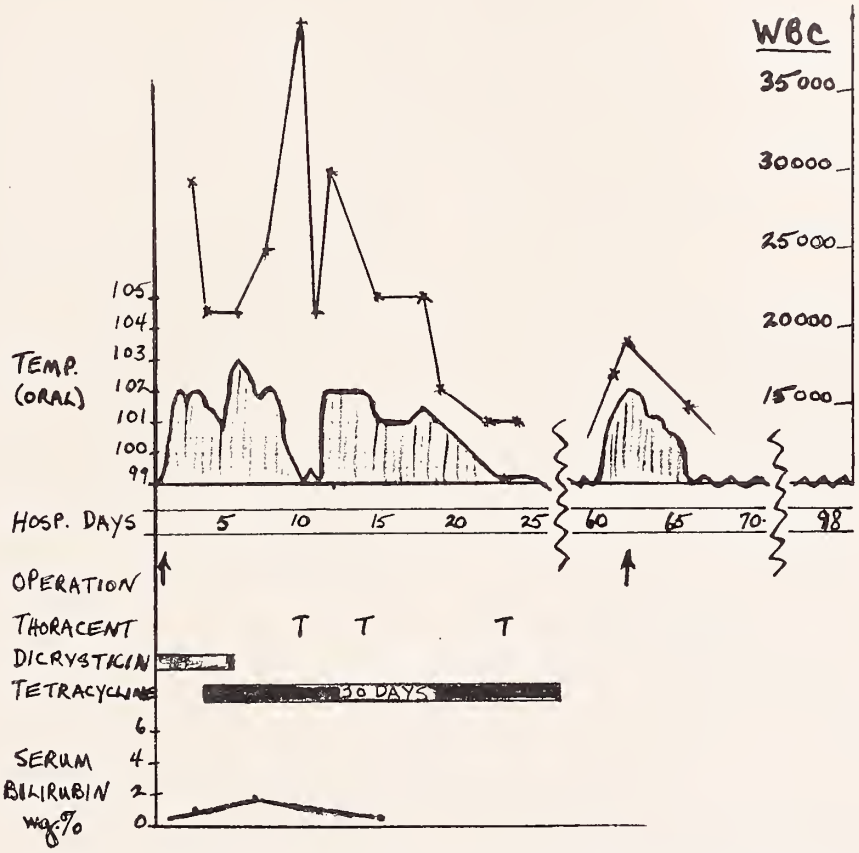


Fig. 1. Case 1: H.B., aged thirty-four. Acute severe laceration of hepatic substance.
Note: Dicrysticin is a combination of penicillin and dihydrostreptomycin.

Case Reports

Case 1.—(Fig. 1). Mrs. H.B., a white woman, aged thirty-four, was injured on February 27, 1956, while riding as a passenger in the right front seat of a car that was struck from behind by another automobile. The patient was admitted to the hospital in an unconscious condition without pulse or blood pressure. Oxygen was started by nasal catheter and one unit of plasma was given rapidly followed by 500 ml. of whole blood; her blood pressure was then obtained at 90/60 mm. Hg. In addition to multiple contusions and abrasions there was an obvious closed fracture of the distal end of the right femur. With the return of blood pressure the patient regained consciousness and began to complain of pain in the substernal area and in the abdomen; the pain was aggravated by aspiration. Examination by this author about six hours after injury revealed a pale, perspiring white women who was in obvious distress. The abdomen was moderately distended but silent and there was tenderness over the entire abdomen more marked in the right upper quadrant. The blood pressure at this time was 90/50, the pulse 120. A peritoneal tap was done and blood was obtained.

Eight hours after the injury the patient was taken to the operating room with pulse 120, blood pressure 100/60. The abdomen was explored through a right upper paramedian incision and 1,500 ml. of old blood and clots were removed. A double laceration on the postero-lateral surface of the right hepatic lobe was found; there was oozing from the exposed liver tissue but no active bleeding. Two small oxycel sponges were

placed in the laceration and five large penrose drains were brought out through the flank beneath the twelfth rib. The patient's postoperative condition and course were somewhat stormy but urine output remained good and on the third postoperative day rectal gas was passed and the gastric tube was removed. The patient was given penicillin and streptomycin for the first five days and on the third day was started on tetracycline, 250 mg., q.i.d., this medication being continued for the next thirty days. Postoperative chest x-rays revealed a fracture of the right seventh rib and on the tenth postoperative day a right thoracentesis was necessary, 250 cc. of serosanguineous fluid being removed. The thoracentesis was repeated on the fourteenth and twenty-third hospital day to remove smaller amounts of slightly bloody pleural fluid.

The patient continued to produce a large amount of purulent and necrotic material from the drain and on her sixty-second hospital day it was necessary to explore the drainage tract because the skin wound had become very small in spite of daily digital probing with a sterile gloved finger. At this time the patient developed an abrupt fever and it became obvious that adequate drainage was obstructed. At operation a large subphrenic abscess containing a handful of necrotic liver tissue was found. The patient's subsequent course was one of progressive healing and no further complications were noted. The fracture in the right supracondylar area was treated with a cast and accounts in part for this patient's long hospitalization. The patient's course subsequent to her hospital discharge has been entirely uneventful.

Comment.—This case illustrates the acute severe laceration of hepatic substance with the typical picture of shock and internal hemorrhage. It is noteworthy that at operation no active bleeding from the lacerated liver tissue was seen. This case also illustrates that delayed complication of inadequate drainage and the sequestration of necrotic liver tissue with the development of a subphrenic abscess. Although this patient's drainage wound was adequate during the initial weeks of her postoperative care, the skin wound rapidly became smaller and it was necessary to enlarge this wound beneath the twelfth rib and evacuate the collection of purulent and necrotic material. Because of the continued drainage of necortic material it seemed wise to administer an antibiotic preparation (tetracycline) and, as has already been noted, this agent was given for thirty days without any sign of intolerance. The medication was again given for approximately ten days at the time the subphrenic abscess was opened.

Case 2.—(Fig. 2). Miss J.A., an eleven-year-old white girl fell from her bicycle on September 13, 1955, striking her epigastric area with the handle of the bicycle. She experienced immediate severe upper abdominal pain and shortly began to complain of pain in the right shoulder. She was transferred to St. Luke's Hospital (Duluth) from a rural hospital about five hours after the injury at which time examination revealed the child to be rather pale and perspiring moderately. Blood pressure and pulse were normal. Hemoglobin was reported as 11.2 grams per cent. Examination revealed the abdomen to be flat but the liver was greatly enlarged and very tender. X-ray of the abdomen confirmed liver enlargement. White blood count was 17,300. Although liver injury was suspected we elected to treat the child expectantly. The following day the white count fell to 12,000. The hemoglobin was 10.2 grams per cent and the temperature rose to 102°. On September 15, the hemoglobin was reported as 8.2 grams and the white count rose to 15,000 with 94 per cent neutrophil forms. About noon of this second hospital day the child began to complain of rather severe right upper quadrant pain; temperature was 101. The abdomen was slightly distended, bowel sounds were present, but the right upper quadrant was very tender and rigid and the remainder of the abdomen revealed guarding and tenderness for the first time. Surgical exploration was decided upon, and, late that evening (fifty-four hours after injury) the abdomen was explored through a right upper paramedian incision. A subcapsular hematoma of the right lobe of the liver containing 150 ml. of liquid blood and 150 ml. of clotted blood was found. This was drained through two large drain wounds in the right posterior and lateral flank areas. The postoperative course was one of high fever with temperature up to 104° rectally and white count as high as 23,000. A right pleural effusion developed and on the eighth hospital day a right thoracentesis removed 120 ml. of bloody fluid which was sterile when cultured.

Following thoracentesis, x-rays of the right chest revealed a pneumonitis in the right lower lobe and the child began to cough up thick yellow sputum. The drains in the right flank appeared to be functioning well but the child remained toxic, spiking temperature to 104° almost daily. Penicillin and dihydrostreptomycin were given intramuscularly during this period and on the seventh hospital day aureomycin was simultaneously administered. On the fourteenth hospital day x-ray and fluoroscopy of the right diaphragm area revealed definite evidence of right subphrenic abscess for the first time and the following day under general anesthesia the right twelfth rib was removed and a posterior approach to the dome of the liver was made.

A large subphrenic and intrahepatic abscess was found; the hepatic portion of the abscess involved the dome of the liver and a large traumatic fissure which was filled with necrotic liver tissue and exudate. A large amount of necrotic liver was removed. Several soft rubber drains were placed in the area and brought through the incision which had been made in the bed of the twelfth rib. The child was started on chloromycetin after this second operation. The following day it was necessary to perform a second thoracentesis, removing both air and blood from the right

pleural space. Following this second operation her course was stormy with jaundice and fever up to 106°. At this same time the white blood count rose to 32,000, then gradually fell to normal level. Ten days after drainage of the subphrenic abscess (twenty-fifth hospital day) temperature was normal and the child was taking a normal diet.

It should be noted that at the time of admission the serum bilirubin was normal but during the period of the subphrenic abscess and its drainage serum bilirubin rose to a total of 8 mg. per cent but had fallen to normal by the tenth day after this surgery. Chloromycetin was discontinued eight days after drainage of the subphrenic abscess and the child was started on oral tetracycline which was continued during the prolonged period of drainage through the right flank wound.

After forty-two days of hospitalization this child was discharged. She was eating a normal diet and carried on normal activities. At the time of hospital discharge the sinus in the twelfth rib wound was still draining a moderate amount of necrotic material and she returned to the office twice a week for digital probing of this sinus tract. The sinus grew progressively smaller, healing from its depth, and closed uneventfully three and one-half months after her discharge from the hospital. The child's subsequent course was uneventful and a series of liver function tests taken nine months after injury were all normal.

Comment.—This case illustrates the innocence of trauma which may produce severe hepatic damage. Also this case graphically pointed out to us the difficulty of exploring the dome of the liver through the anterior approach. At the time of the original surgery the subcapsular hematoma which was drained was merely a sign of the extensive fragmentation of hepatic tissue which had occurred on the posterior and superior aspects of the right lobe. Both surgeon and patient will pay the penalty for inadequate drainage of the damaged area of the liver. Although the original delay in exploration was probably justified, more prompt secondary drainage might well have shortened this patient's hospitalization. Following the first operation this patient gave every indication of a septic process in the right upper quadrant, and confirming our clinical impression by x-ray evidence of subphrenic abscess probably represents an over-extension of the conservative surgical approach. The delay here, and inadequate initial drainage of the necrotic liver tissue undoubtedly contributed to additional death of hepatic tissue and to the patient's violently toxic

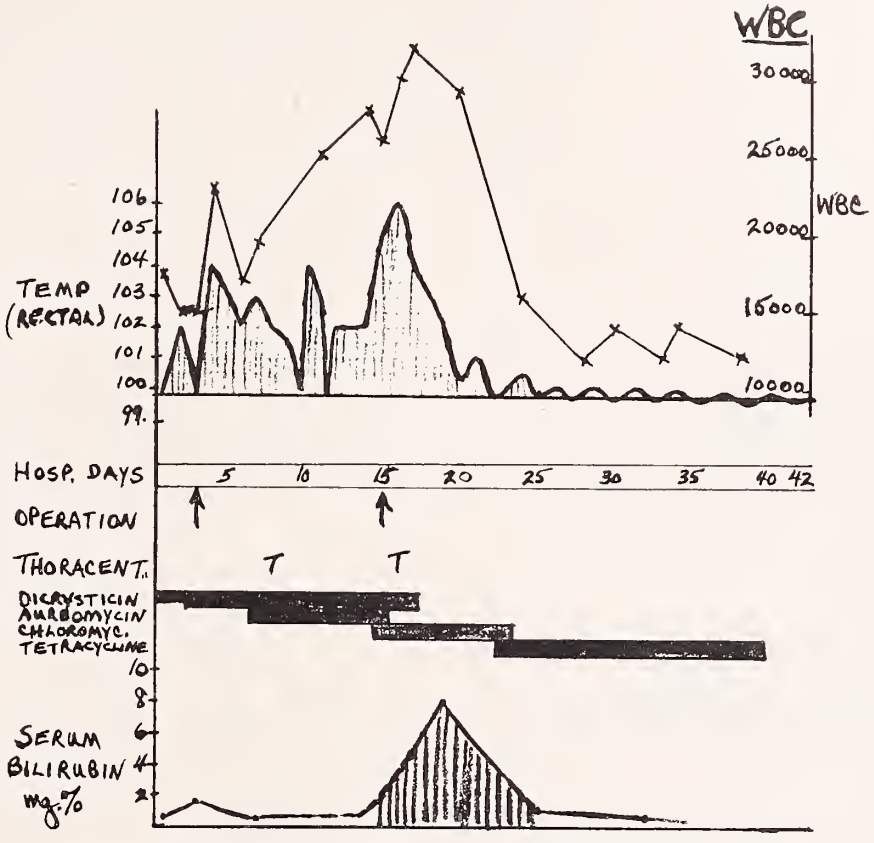


Fig. 2. Case 2: J.A., aged eleven. Severe hepatic damage. Note: Dicrysticin is a combination of penicillin and dihydrostreptomycin.

and jaundiced condition during her hospital course. Her rapid improvement after adequate drainage further emphasizes this point. Of the three cases presented here, this was the only one

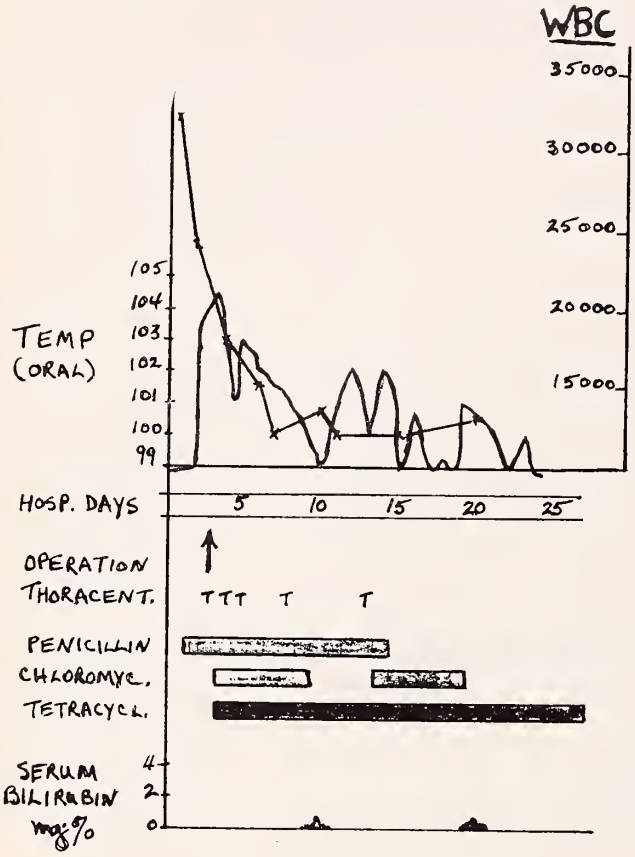


Fig. 3. Case 3: B.B., aged twenty. Hepatic laceration in pregnant woman.

with obvious clinical jaundice. The jaundice here was probably due to the extensive damage to the right lobe of the liver and to a toxic effect of delayed drainage of the subphrenic abscess.

Case 3.—(Fig. 3). Mrs. B.B., a white woman, aged twenty, was injured on October 1, 1956. The right front seat passenger, she was thrown out of the door when the car was struck from the left side by another vehicle. The patient stated that, in falling out of the car, she felt that her lower chest was compressed when she struck the car door. The patient had reached the seventh month of her first pregnancy, and although the pregnancy had been completely normal up to this time, the patient stated that she felt no intrauterine movements following the accident. On admission to the hospital her blood pressure was 70/50 mm. Hg. No fetal heart tones were heard. There was no obvious external injury and no external bleeding. White count was reported at 32,400 per cu. mm. with 86 per cent neutrophil forms. Hemoglobin was 10.7 gm.

About twelve hours after the injury the patient delivered a stillborn baby. At this time, having received whole blood transfusions, her blood pressure was stable at 110/70, pulse 80 to 100. Admission urinalysis revealed 15 to 20 red cells per high power field but the urologic consultant did not feel that there was any evidence of primary renal injury. Abdominal paracentesis was carried out on the second hospital day but no blood or abnormal fluid was obtained. At the end of the second hospital day temperature had risen to 103° and the abdomen was distended and silent. There was some tenderness in the lower abdomen with rebound tenderness. A chest film taken on October 3, revealed a right plueral effusion and thoracentesis produced 500 ml. of sero-sanguineous fluid.

After the thoracentesis the patient was prepared for surgery and operation was begun sixty hours after the initial injury. Preoperative diagnosis was ruptured liver. A right subcostal incision was made and 1,700 ml. of dark fluid blood was found filling the peritoneal cavity. An extensive traumatic laceration of the lateral and superior surface of the right hepatic lobe was visible. There was no active bleeding from the wound but there was a moderate amount of necrotic liver tissue in the depth of this fissure. After aspirating the blood and removing some necrotic liver tissue an additional drainage wound was made in the right posterior flank. Several drains were brought out through each of these incisions, closing the medial half of the subcostal wound in the usual manner. Her postoperative course was one of rapid improvement although fever and leukocytosis persisted for several days. It was necessary to tap the right pleural effusion on four additional occasions. The patient received penicillin, chloromycetin and tetracycline postoperatively. The tetracycline was continued until discharge from the hospital, thirty-three days after admission. She was subsequently followed in the office and continued to drain both purulent material and necrotic liver tissue for two weeks. The sinus healed without difficulty and closed two and one-half months after the original injury. The patient has subsequently enjoyed good health and one year after her hepatic injury returned to the hospital to deliver her first normal child after an uneventful pregnancy.

Comment.—Again the difficulty in diagnosis of this condition is well illustrated. It is of interest that the obstetrician suspected hepatic laceration at the time the girl was first admitted to the hospital. The rapid recovery in this case, in comparison to the two previously discussed cases, demonstrates the efficacy of early and adequate drainage of the damaged liver. The regenerative and restorative ability of the liver is exhibited in this case as in those previously discussed.

Summary

Experience with three cases of extensive traumatic injury to the liver has been presented. The several lessons learned and therapeutic principles to be followed have been discussed and illustrated.

(References are on Page 804)

Examination of the Common Bile Duct

A Study of 528 Consecutive Cases

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IN A PREVIOUS PAPER,[1] criteria for choledochostomy tube removal were discussed. A number of years have passed since this publication, and it seems appropriate to examine our experience in this regard, in an effort to evaluate the program then advocated.

Case Material

Five hundred twenty-eight consecutive cholecystectomies* performed for gall bladder disease at the Minneapolis Veterans Hospital during a five-year interval—from January 1, 1948 to December 31, 1952—were reviewed for this purpose (Table I). This period was selected because each patient would have had at least five years elapse since his procedure. Operations done upon patients with pancreatitis are not included in this study, since the latter disease presents unique problems.

TABLE I.

CHOLECYSTECTOMIES FOR GALL BLADDER DISEASE

Year	Total	C.B.I.D. Exploration	Cystic Duct Cholangiogram	Total Duct Examinations
1948	94	19 (20%)	6	25 (26%)
1949	73	29 (39%)	21	50 (68%)
1950	116	38 (33%)	22	60 (51%)
1951	122	33 (27%)	32	65 (53%)
1952	123	38 (31%)	40	78 (63%)
Total	528	157 (30%)	121	278 (51%)

In considering these cases, several facets of the problem were examined, namely:

1. Indications for common bile duct exploration.

2. Results of cholangiography via the cystic duct.

3. Morbidity of common duct manipulation and cholangiography.

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*This includes seven patients who had previous cholecystectomy elsewhere, and were explored for common duct stone.

4. Occurrence of residual common duct calculi after exploration.

5. Optimum time for choledochostomy tube removal, and criteria for the same.

Indications for Exploration of the Common Bile Duct.—In this series, the accepted indications for exploration were followed. These are well documented and require no repetition. Obviously the most infallible indication for exploration of the duct is the presence of a palpable intraluminal stone, and when this was recorded, calculi were found in 100 per cent of cases. Conversely, stones were removed from ducts in thirty-one cases in which no mention was made of a palpable stone. This large number may be due to errors in recording, but even after a Kocher maneuver (which should be routine) a stone may not be recognized by palpation. Recent jaundice and a dilated common bile duct were the next most reliable indications. In fifty-four instances the duct was said to be "dilated," yet no stones were found, and in three instances stones were removed from a duct reported to be "normal." Accurate descriptions of pathology, and measured duct diameters, rather than vague statements such as "moderately dilated," "somewhat dilated," are necessary for proper interpretation of such material.

Cholangiography via the Cystic Duct.—This was done only in patients in whom no standard indication for common duct exploration existed. In this series of 121 such cholangiograms, three showed presence of stones. These calculi would most certainly have been missed without the cholangiogram. However, four negative duct explorations were carried out because of failure of, or misinterpretation of cholangiograms done through the cystic duct.

Dangers in Common Duct Manipulations.—The common bile duct has earned universal respect. Probably no portion of the gastrointestinal tract requires more delicate handling, and serious injuries to this vital structure have far-reaching consequences. In addition to the hazards of common bile duct exploration, as injury to the duct, false passage, et cetera, one should consider the less frequently recognized (yet very real) risks incident upon cholangiography.

The pressures within the biliary tree are in a declining gradient. The secretory pressure of the liver is approximately 30 cm. of water, the contractile force of the gall bladder—20 cm. of water, and the resistance at the choledocho-duodenal junction, 9 to 18 cm. of water. Under normal conditions this does not allow pressures within the duct system in excess of the secretory pressure of the liver. In performing cholangiography, using the usual syringe method, extremely high pressures may be employed, resulting in cholangitis, bacteremia, and possible liver abscess. Cholangitis occurred in eight of this series, either following the operative cholangiogram, or more frequently, in the postoperative study. Efforts at controlling the amount of pressure by gravity methods of cholangiography, and by using a tube with a 20 cm. overflow in the system are worthwhile.

Another untoward effect of cholangiography and exploration of the common bile duct is the production of acute edematous pancreatitis, an event which occurred four times in this group. This probably happens more often than is realized, for unless routine serum amylase examinations are done immediately postoperatively, the diagnosis may be missed. It is likely that pancreatitis is more prone to occur in patients in whom a "common channel" exists.

Amyl nitrate and nitroglycerine are the only compounds regularly causing relaxation of alkaloid-induced sphincter (of Oddi) spasm. It is well to remember that use of these agents, especially amyl nitrate, may allow one to obtain a satisfactory cholangiogram when first attempts show failure of passage of contrast medium into the duodenum.

Occurrence of Residual Stones.—Residual stones were encountered in ten patients in this series. In one case the presence of stones in the hepatic radicles were recognized at surgery, but these were not removed after repeated attempts. Other residual calculi were discovered during routine study prior to choledochostomy tube removal. Irrigation with various agents was used in an effort to dissolve these calculi, or flush them through. In the five-year period, only one of nine had successful removal of stones by these manueuvers. In one other case the patient was re-explored, and no stone found. This suggests the advisability of a cholangiogram on the day of proposed re-exploration, to determine whether the defect in the duct shadow is still present. The

remaining patients underwent re-exploration and removal of residual calculi.

Choledochostomy Tube Removal.—The optimum time for removal of choledochostomy tubes is a subject of some difference of opinion. An early attempt at a scientific answer to this problem was by Carter[2] who varied the position of the bile drainage bottle, removing the tube when bile failed to run into the drain with the bottle at the level of the common bile duct. Our method for determining the optimum time for removal of such tubes is based on the fulfillment of three criteria: (1) that the postoperative cholangiogram be normal, (2) that the patient is able to tolerate the tube clamped for a prolonged period of time and (3) that the resistance of the sphincter of Oddi be measured within normal range, without irritability or spasm.

Considering these criteria individually:

1. *Normal cholangiogram.*—It is our practice to perform cholangiograms routinely in the postoperative period. Residual stones may be excluded only by a satisfactory cholangiogram. This must be done with the same precautions to avoid excessive pressure as in the operative study.

2. *Clamping the tube.*—The patients' ability to tolerate the tube clamped for periods in excess of twelve hours is a functional test of the extrahepatic duct system, but gives no information concerning structural abnormality or partial obstruction. We prefer to clamp the tube during the waking hours (the degistive period) since it appears to be a more critical test, and has the advantage of furnishing the patient his own bile for digestion.

3. *Sphincter resistance.*—Sphincter resistance is measured, using a Kelly flask with a Murphy drip apparatus. The flow of normal saline through this system into the duodenum is measured in centimeters of water pressure. The normal range is 9 to 18 cm., measured from the estimated level of the common bile duct. Ideally, this pressure should be approximately 12 to 14 cm. of water, without evidence of irritability or spasm.

When the postoperative cholangiogram is normal, the patient can tolerate the tube clamped, and the resistance of the sphincter of Oddi is normal, the choledochostomy tube may be removed. Originally these studies were carried out between the ninth and twelfth postoperative days and the choledochostomy tube removed upon fulfillment of these criteria. Removing the tube that early postoperatively led to fracture of the choledochostomy tube tract in four instances, with development of local bile collections requiring drainage. Short-limbed choledochostomy tubes tend to prevent this, but a delay until the tract is more firm will decrease the incidence of such accidents. With removal of the choledochostomy tube delayed fourteen to twenty-one days this event has been less frequent.

Of 154 patients tested in the postoperative period, nine failed to meet the criteria because of calculi in the common bile duct. Five of these had elevation of sphincter resistance. Of six others who had persistent elevation of sphincter resistance, two were shown to have pancreatitis on follow-up examination, and four were unexplained save for irritability of the sphincter. In these latter, pancreatitis was still a possibility and was not definitely excluded. Once the criteria for choledochostomy tube removal are met, and the tube removed, none of the patients available for follow-up had further trouble (64 per cent of the series).

From experience with these cases, and with others in the period from 1952 to 1955 not covered in this report, it would seem that most instances of the so-called "post cholecystectomy syndrome" have an anatomic or pathologic basis, rather than being due to sphincter spasm. Residual common duct calculi, and pancreatitis probably account for the majority.

Summary

1. A series of 528 consecutive cholecystectomies has been studied.

2. Several features of common bile duct examination are discussed.

3. The optimum time for choledochostomy tube removal and the criteria for determining this, has been reviewed.

4. "Post cholecystectomy colic" usually has a demonstrable anatomic or pathologic basis.

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The Crying Baby

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FRANCIS BACON wrote philosophically about the newborn baby's cry:

> "What there remains but that we still should cry
> For being born, and, being born, to die?"[1]

In his essay on Death, however, he goes on to say:

> "It is as natural to die as to be born and, to a little infant perhaps the one is as painful as the other."

Observations on the cause of the birth cry have had considerable interest to practicing physicians. The literature has become voluminous on the cry of the baby throughout infancy. Dr. Anderson Aldrich and his associates, however, have probably written more of importance on this subject than anyone. The following statement of Dr. Aldrich's portrays his attitude:[2]

> "It would not be surprising if physicians interested in such immediately serious matters as the diagnosis of malignant lesions, diabetes, hypertensive disease and low back pain should raise a questioning eyebrow at the idea of spending long hours in observing and investigating an activity so apparently insignificant as infantile crying. (It might be remarked here that the insignificance of infantile crying depends somewhat on whether one stands on the receiving line during the small hours of the night or merely listens in professionally to telephone complaints.) But to the student of human physiology, nothing can be insignificant. And, as a matter of fact, a study of the cry of the newborn infant shows it to be highly important for the safety of the baby and emphasizes that pediatricians need to understand more about it."

Clearly the baby's cry is important. The following discussion will cover: (1) the quality, (2) the quantity, (3) the cause and (4) the effect.

The Quality of the Cry

The sick baby often has a distinctive quality to his cry. This is readily recognized in a variety of conditions. To illustrate a few: (1) the hoarse cry of the cretin, (2) the shrill cry of the hydrocephalic or the baby with meningitis, (3) the hoarse cry of laryngitis, (4) the feeble cry of the debilitated child, (5) the whimper of the seriously ill child.

The well baby, too, has qualities to its cry which may be informative to the astute clinician. In 1927 Sherman[3] subjected babies to a number of stimuli to make them cry—hunger, sudden change of position, restraint of the head and needle pricks. Within hearing distance in an adjoining room a group of graduate and undergraduate nurses listened and wrote down what they thought was causing the crying in each instance. They all failed. These would be instances in which there was no demonstrable correlation between etiology and recognizable quality of the cry.

We might say that the mothers of these babies would not have failed so completely. I believe most of us feel that the cry of pain, for instance, is different from that of boredom. However, when we begin to think of distinguishing the cry of hunger from that of pain or the so-called "colic," we realize that the quality of the cry of a healthy baby may have little real clinical significance. I often ask the mother this question just the same: *"Does he cry as if he is in pain or is he just fussy?"* The mother always seems to know what I mean and will answer promptly. She seems to feel that she knows if the baby has an earache with his cold or if he is simply uncomfortable, aggravated, or miserable because of the stuffy nose.

Only the human really weeps, although the deer is said to shed tears when he loses his antlers. At any rate, crying during the first few weeks of life has no association with emotion. Darwin[4] first noticed tears associated with the crying at sixty-seven days of age. However, it is usually expected to occur at about a month or six weeks of age in many instances.[5] It is not

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likely that this has any emotional significance at this tender age. Even sobbing does not occur unassociated with crying until after the child is a year old. When the baby has matured enough so that he can sob without crying or have his eyes fill with tears without yowling he is able to be unhappy just like a grown-up. This is an accomplishment (if one may call it that) which is attained sometime during the second year. His psyche takes over and that which was formerly merely animal discomfort is now human misery.

Dissociation of the psyche from the cry may occur in certain cases of abnormality. This affects the quality of the cry. For instance, Darwin observed that "cretins never shed tears but merely howl and shriek on occasions which would naturally produce weeping."[6] The mother of a mongoloid child almost always says that the child is a "good" baby, meaning that he seldoms cries. The autistic child is seldom moved to normal tears or to normal laughter. Sudden psychic shock, even though it might be expected to cause grief, may bring no tears—but now we are getting away from infancy.

Sir G. Frederic Still in his little book on "Common Happenings of Childhood"[7] makes the interesting observation that seriously ill children with febrile illness seldom shed tears even though they may be very fretful. He goes on to note that in tuberculous meningitis, tears almost never occur. He considers it a point to be considered in diagnosis.

The Quantity of the Crying

The quantity of the infant's crying has been scientifically investigated by Aldrich and his associates,[2,8-13] Stewart and associates,[14] Wessel,[15] Illingworth,[16,17] and many others.[18] It is difficult to set a normal or average amount of crying. Wessel described "colic" as paroxysmal fussiness and studied the behavior of ninety-eight babies.[15] Of these, there were fifty who were classified as "contented" and forty-eight were called "fussers." Sixty-four of the ninety-eight had a regular diurnal period of fussiness, usually in the late afternoon or evening . Twenty-one had a daily fussy period without regularity and thirteen did not fuss. He had very accurate records on twenty-nine babies. The duration of "fussiness" in these infants was charted. By the end of the second month almost all of the babies had stopped their fussing.

Wessel charted the hourly incidence of fussiness at the time of post-natal check-up. It could be seen that the babies were at their worst from 7:00 P.M. to 8:00 P.M. when 42 per cent were noisy. Almost all of them were peaceful between 3:00 A.M. and 4:00 A.M. and between 1:00 P.M. and 2:00 P.M. The parents who habitually walk the floor in the wee hours have a bad baby, because most infants are quiet then.

Aldrich studied babies in the hospital nursery in 1944.[12] He sought to determine the causes of crying. Then, he sought to correct these causes and made another study in 1945. In 1944 each baby cried an average of 113.2 minutes daily. In 1945, the average was only fifty-five minutes per day, thanks only to more nursing care.

Then he contrasted the number of crying spells of the newborn in the nursery and the number after the baby went home, but still under seven weeks of age. Those in the nursery had an average of 11.9 crying spells daily while those at home had an average of only four per day.

He charted the average number of minutes of crying during each hour of the day, using the average of fifty babies. The one who cried least averaged only 48.2 minutes per day while the one who cried most reached 243 minutes daily.

The Cause of the Cry

At birth the cry is presumed to be nature's way of expanding the lungs. This is perhaps true, but why the "cry"—why not a series of deep inhalations or sighs, or maybe a sneeze or a scream? Some have said it is an indication of displeasure. Displeasure at what? How does anyone know that it is particularly pleasant inside the mother's uterus? Besides, *vagitus uterinus* is a phenomenon which has been observed since antiquity.

Were Mahomet and St. Bartholomew unhappy *in utero?* They were said to have cried there. If pain has anything to do with the birth cry one might expect that the difficult, traumatic births would be more likely to elicit it. This is not the case. The quickly, easily born baby is the one who yowls the quickest and the loudest. One author writes that the birth cry is to be looked upon as a disappearing reflex like the startle reflex.

In the newborn period, the cry has been mentioned as having no particular emotional significance. Aldrich has studied the causes of crying during this period very carefully.[11] His information has a practical significance in that he was able to cut down the amount of crying.

He definitely demonstrated that group crying in the nursery is not of a contagious nature. The crying of one baby does not induce the others to cry also. As a matter of fact, relatively few of the babies in a nursery are usually crying at the same time. The cause of crying spells in most cases was not known. However, the most common known cause was hunger.[10]

Having studied the causes of the crying, Dr. Aldrich set out to stop some of it. The problem was almost entirely one of nursing care. The more care the less crying.[9] The results of his efforts were dramatically successful.

Illingworth emphasizes boredom as a common cause of crying, especially in older babies.[16] He emphasizes personality make-up as a factor even at an early age. Some babies are placid and difficult to provoke. Others are aggressive and difficult to satisfy or to placate.

Stewart studied excessive crying associated with parental behavior.[14] There were eighteen infants (ten boys and eight girls) all children of students living in a housing project. Among the babies who cried excessively parents were found to be prone to respond inappropriately and inconsistently to their babies' needs. These babies not only cried more—there was more regurgitation, night walking, growth failure, nasal hyperfunction, increased muscle tension, variability in gastrointestinal functions and absolute eosinophil counts. They also had frequent illnesses.

The above observations would have been expected by most practicing physicians. Probably most of us feel that we can predict feeding problems while the little patient is still *in utero*. You might say that pediatric care should begin with the prenatal visits. I do some of this by trying to demagnify the problems which the expectant mother is already anticipating. This, plus reassurance and education, constitutes a sort of preventive pediatrics.

Wessel ranks family tension high as a cause of paroxysmal fussing.[15] Understand that these cases were only those of colic and did not include those in which nursing factors such as wet diapers, hunger, et cetera were involved. In short, he reports that 46 per cent of cases could be traced to family tension alone. This may seem rather high at first glance, but as most of us think back over our own experiences it will probably come to appear quite reasonable.

The Effect of Crying

The effects of baby's crying are varied and often unpredictable. At any rate, they are usually felt by the family, the neighbors, the baby himself, and, most likely, the physician. Persistent, insatiable crying may actually produce serious tension within the family. This is particularly true of the young mother, who, as often as not, already feels incompetent. Her young one's incessant crying only adds to her frustration. This, in turn, may upset papa and junior may, in his noisy infant innocence, become the third angle in a triangle of trouble.

Probably most of us have even known especially defiant babies to lead stouthearted physicians to frustration. Seriously, it is difficult to maintain common sense and remain calm week after week when baby continues to cry in spite of all of your efforts. It is obvious that the physician's answer to therapy often lies in the intelligence and the understanding of the parents rather than in anything he might give or do to the baby.

So far as the baby himself is concerned, his crying is often just an excess of a normal or a little more so and is not likely to effect him in any way. On the contrary, it may simply add to the assurance that a healthy future is in store for him. Naturally, it may influence people, as he perhaps intends it should, whether or not it makes him any friends.

Seriously, however, I do not believe that anyone has made any long-term follow-up studies of the personalities of those well babies who cry to excess. Perhaps it would be worth while. However, I believe that most of us feel, simply from experience, that such a study would uncover nothing which would cause the mother of such a baby to fear for its future.

Summary

Babies will always cry. The significance of infantile crying should not escape our professional attention. Much can be learned from evaluating its quality, its quantity, the possible causes and some of the effects. These aspects of the baby's cry have been reviewed.

(References are on Page 792)

The Minnesota Poison Information Center Network

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SUBSTANTIAL NUMBERS of the physicians of Minnesota in recent months have been aware, in one way or another, of the fact that a Poison Information network was being organized in Minnesota. The matter has been the subject of discussion in several of the professional medical organizations of the state, and has been alluded to in publications *(Minnesota's Health,* et al.) and in staff meetings of most of the hospitals in the Twin Cities as well as many of the larger hospitals in other communities.

In addition, many physicians have come to know that the Poison Information network activities are centered in the Minnesota Department of Health, and that specific information of assistance in identifying the ingredients of commercial, agricultural, industrial, and household products and substances can be obtained by telephone calls to the Minnesota Department of Health or through the Hennepin County medical switchboard. As a matter of fact, a group of local poison information centers has been unofficially functioning in the Twin Cities area for about four months on a "test" basis. It is now apparent that the original projected plan for the organization and operation of a Poison Information network for Minnesota is practical, and as a consequence, the network is being extended into the outstate areas. By early fall it is expected that the organizational stage of this project will be completed for the entire state.

The purpose of this discussion, then, is to generally and officially acquaint all physicians in Minnesota with the organization and function of the Minnesota Poison Information Center program.

Background

Beginning in 1953, with the study by Dr. Edward Press of the incidence of accidental poisonings in children in Chicago, Illinois, there has been a phenomenal growth of interest in this problem, only one facet of which is evident by the development of 126 so-called poison centers in forty states of this country. A review of these facilities by the Minnesota Department of Health during the summer of 1957 showed a wide range of function and effectiveness of the already-established centers. Some organizations were obviously only "paper" in nature; others involved elaborate and complicated organizations for actual treatment facilities, for research, and for epidemiological study of the problem of accidental poisonings. It seemed apparent that the general wave of interest which accounted for the rapid growth in numbers of poison center programs also often accounted for some rather definitely illogical plans and organizations. Considering that the ultimate practical problem was one of assembling and disseminating (on a systematic and continuous basis, and as widely as possible) the best possible information on the formulation of substances which children may accidentally ingest, and considering the population distribution and the distribu-

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tion and quality of medical care in Minnesota, a plan was developed for Minnesota which, it was believed, would be workable and practical even when the support lent by general enthusiasm in this area of interest waned.

In consultation with a number of physicians, notably Dr. Robert Semsch; Dr. John Anderson, Professor and Head of the Department of Pediatrics of the University of Minnesota Medical School; Dr. Raymond Bieter, Professor and Head of the Department of Pharmacology at the University of Minnesota School, Dr. Robert N. Barr, Secretary and Executive Officer of the Minnesota State Board of Health, invited representatives of state and local medical and lay organizations to meet to discuss the projected Minnesota plan of organization and operation. Members of this committee included Dr. Raymond Bieter, Dr. Harold N. Wright, Mr. Harold Brunn, Dr. Frank A. Ubel, Dr. Robert D. Semsch, Mr. Boris Levich, Dr. W. E. Park, Dr. Donald E. Roach, Mr. Glenn I. Prickett, Mr. Henry M. Moen, Dr. James R. Fox, Mr. George S. Michaelsen, Dr. Tague Chisholm and Mrs. Richard Angevina. This advisory committee to the State Board of Health met in September of 1957 and gave its approval of the plan.

Since that meeting several months have been required to develop the details of the organizational plan and to institute the test operation in the Twin Cities area.

Basic Problems

The Minnesota plan develops logically from several basic premises as follows:

1. The fundamental problem confronting physicians in the majority of cases of ingestion of "non-edible" substances by children is the accurate identification of the ingredients of these substances. Today there are 250,000 trade-named items on market shelves in the United States, and these are almost universally lacking in this identification of their formulation.

2. Once the ingredients are known, the next question of the perplexed physician is: *Are these substances toxic and if so, how toxic, and what is their mode of action?* The logical planning of specific first aid measures, therapy on the basis of developed symptoms, or prophylaxis, is completely dependent upon accurate answers to these questions.

3. Unfortunately, in the vast majority of instances—indeed, except for a very few isolated compounds—specific antidotes are not available.

4. In general, treatment facilities in Minnesota are quite adequate. The physician's problems are not those owing to lack of access to good treatment facilities, but to lack of accurate, comprehensive, and detailed sources of specific information. Undue emphasis on the development of treatment facilities or centers on an organized basis is probably not only unnecessary, but to a degree, could impede a thorough exploitation of the area of dissemination of reliable toxicity data.

5. Emphasis must be placed on the development of a service which is fundamentally between physicians. The ingestion of "non-edible" substances by children is a medical problem. A poison information network should, to the fullest possible extent, operate to assist the physician dealing with a specific problem. Calls from a parent should not be allowed to become a substitute for a visit to the physician. Advice given to parents should be restricted to first aid only, with urgent suggestion that a physician be called.

6. A poison information center is never in a position to give specific advice on the details of therapy. Its services in this area necessarily must be general, consultative, and advisory only. The final responsibility for accepting or rejecting the advice and information relayed to him by a Poison Information Center remains with the physician in charge of the patient.

The Minnesota Plan

In the framework of the foregoing principles, the Minnesota plan envisions the development of a substantial number of so-called regional poison information centers to serve physicians generally within their own medical communities, coordinated with and assisted by a central Poison Information office in the Minnesota Department of Health.

Specifically, at least three regional centers were planned for each of the Twin Cities, where approximately one-third of the state's entire population is located. In addition, a minimum of ten to twelve other centers were proposed at other strategic locations within the state. Insofar as possible, it was expected that regional centers would be established in larger community hospitals. Once completely organized, it is intended that every physician in Minnesota will have convenient access to the resources and assistance of

a regional poison information center on a reasonably local basis, namely, by a telephone call to one of the larger hospital facilities in his general area.

The relationships of functions between the regional centers and the central Poison Information Center in the Minnesota Department of Health are so intertwined that it is difficult to separate them for discussion purposes. Since it is proposed that a physician's contact to the network will be primarily with the regional centers, a discussion of the organization and operation of this portion of the network seems desirable first.

As previously stated, it is proposed that the centers will be located in hospitals. These hospitals, through the administrative and medical staffs, are requested to designate some responsible medical or professionally allied staff member to serve as the "Poison Control Officer." This officer is responsible for supervising the Poison Information service. The suggested duties for this officer are as follows:

1. To familiarize himself and those to whom he delegates the authority with the informational resources of the center.

2. To arrange for making the resources of the regional center available on a twenty-four-hour basis.

3. To be responsible for the maintenance of the informational resources.

4. To the extent practical and consistent with the function and services of the hospital, to work toward: (a) improving the regular operating procedures in the hospital for twenty-four-hour-a-day treatment of poisonings and (b) enlisting the cooperation of the attending (and house) staff in treating and reporting cases of poisoning, including special orientation of emergency room personnel, as necessary.

5. To serve as a liaison person between the participating hospital and the central center of the network.

Its collection of information is the physical component of the Poison Information center. This collection is provided to each regional center by the central center of the network and is the best possible compilation of information that can be assembled aimed at:

1. *Identification* of the potentially toxic constitutents in the great host of household, commercial, industrial, and agricultural products and substances that could be and are occasionally accidentally ingested by children.

2. *Estimation of toxicity* and modes of action of toxic substances in the wide variety of potentially dangerous materials which are commonly found in the home or which form the basis for trade-named and other products and formulations.

3. Provision of current knowledge relating to *first aid measures* and *treatment* for ingestion of toxic materials.

This collection, at present, is in the form of textbooks, handbooks, trade indexes, card files, et cetera. The information resources of regional centers will be expanded, and kept active and current on a regular basis from the central center.

Functionally, it is proposed that a physician, when confronted with an accidental poisoning problem, will telephone his regional center, and there will be readily available to him accurate, reliable data on the type and effect of toxic substances contained in the material swallowed, and general suggestions for therapeutic procedures. Actually, it seems likely that eventually, as the network is extended, a large proportion of physicians will have direct and personal access to the resources of the regional centers for detailed reference in planning treatment and investigating toxicity effects and actions. Obviously, the final responsibility for accepting, modifying, or rejecting the information remains with the physician treating the patient.

It is expected that occasionally the formulation of a product and/or the estimation of toxicity of rare or very new compounds will not be available from the resources of the regional centers. Here, it is planned that a relayed telephone call to the central center of the network will, in most instances, probably provide a satisfactory answer to the questions, from the more extensive resources of information which will be maintained there.

As previously noted, a separation of the functions of regional centers from those of the central center is not possible, since they are intended to coordinate and supplement one another. This has been evident in the preceding paragraphs describing the activities of regional centers, where it has been necessary for purposes of clarity to make direct reference to several of the functions of the central center. Including those activities already referred to, the general functions of the central

center of the Poison Information network can be summarized as follows:

1. It will act as a central reservoir of reference material on toxic substances, commercial formulations, toxicity data, treatment methods, et cetera, in more detail than possible in the regional centers. Problems that cannot be answered satisfactorily in the regional centers will be relayed by telephone to the central center.
2. It will collect and disseminate information to the regional centers so that these centers may maintain an active, current, and expanding collection of information on identification, toxicity, and treatment.
3. Through its own program and the coordination of its activities with other organizations, it will aid in reducing the incidence of accidental poisonings by the preparation and dissemination of educational materials.
4. It will provide reporting, tabulation, and statistical analysis of the incidence and consequences of accidental poisonings as a measure of the effectiveness of the program.
5. It will provide laboratory facilities when needed for the identification of toxic materials.
6. It will coordinate the interest and activities of state and local medical organizations, the University of Minnesota Medical School, nursing, veterinarian, and pharmaceutical associations, local safety groups, parent-teachers' organizations, service clubs, and welfare councils.
7. It will encourage the development of appropriate legislation as necessary.

As a general statement, therefore, the central center will be responsible for providing the physical basis for the regional centers' operations, and for assisting and aiding regional centers in every possible way in the performance of their functions. In addition, it will undertake special studies, investigations, and projects designed to "minimize the damage from potentially toxic substances by improving efforts at prevention and treatment of poisonings."

Present Status of Organization

As of August 1, 1958, several regional centers are in actual operation in hospitals in the Twin Cities area. Negotiations are in their final stages for the establishment of a number of additional centers out in the state, and these are expected to be in operation by early fall of this year. Announcements of the locations of the Twin Cities centers will be made soon in the official publications of the Hennepin County Medical Society and the Ramsey County Medical Society. As other centers are established, official notification to the medical profession will be made in Minnesota Medicine, as will any changes or additions to the network on a periodic basis.

There are three items of considerable importance to the network's plans and operations which should be noted in this discussion.

The first of these is a reiteration of the fact that the network's services must be restricted to the exchange of information between physicians. Parents will be urged by all centers to consult with their physician in every case of actual or probable ingestion of potentially toxic materials by children. The network's services will not be publicized to the lay public in any way and all physicians are urged to help guard in this matter.

The second is an acknowledgment of sincere gratitude for the assistance given the central center by Dr. Raymond Bieter and Dr. Harold Wright of the Department of Pharmacology of the University of Minnesota Medical School. Their extremely valuable experience and record of assisting physicians with accidental poisoning problems for many years was volunteered to the Poison Information network on a consultant basis in spite of the added burden that this imposed upon them.

The last is also an acknowledgment of gratitude to the Minnesota State Pharmaceutical Association for its gift of $1,000 with which it has been possible to purchase resource materials of information for distribution to the regional centers. Without this gift, the network's organization would have been much more difficult.

Conclusion

The development of a coordinated and integrated Poison Information center network is not a simple matter. If such a program is worthwhile, it is so to the extent that it provides a direct, useful, and effective service to the practicing physician who is confronted with a specific problem. The Minnesota plan assumes that this can be effected most logically within a physician's own medical community. As a corollary, it is implied that the success of the plan is dependent entirely upon local interest and support for the activity by practicing physicians.

Subdiaphragmatic Abscess

A Survey in Duluth

● *Subdiaphragmatic abscess, a very serious and often fatal disease, appears to be more frequent. It is commonly a complication of gastric or biliary surgery, especially in the aged. Constantly keeping this catastrophic complication in mind and correct early diagnosis coupled with adequate extraperitoneal drainage, offers the patient the best hope for recovery.*

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ALTHOUGH there are extensive reviews of large series of cases of subphrenic abscess in the literature,[1,2,3] it was the author's impression that locally the condition was of sufficient importance to warrant a study of our own experience. The records from 1937 to 1956 in St. Mary's Hospital and St. Luke's Hospital in Duluth were reviewed. During this period there were forty-five cases of subphrenic abscess treated in these hospitals. Only cases which had an abscess subadjacent to the diaphragm anatomically demonstrated by surgery or at autopsy were included. Undoubtedly, there are some cases of subphrenic inflammation which subsided without drainage which were omitted. However, from the records, it was not possible to be certain of the diagnosis in these cases. Subhepatic abscesses were not included because they present more the problem of any intraperitoneal collection of pus rather than that related to inflammation immediately under the diaphragm.

Subphrenic abscess is a catastrophic illness. Twenty of these patients died, a mortality rate of 44 per cent. Ochsner and Debakey[1] reported at 50 per cent mortality. For the twenty-five sur-

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From the Department of Thoracic Surgery, The Duluth Clinic.

TABLE I. SUBPHRENIC ABSCESS

Wrong Diagnoses Considered
(45 Patients)

	No. patients
Atelectasis	8
Peritonitis only	6
Pleurisy	3
Pneumonia	3
Cholangitis	2
Cholecystitis	2
Pulmonary infarct	2
Inanition	1
Pyelitis	1
Fungous infection	1
Liver abscess	1
Coronary disease	1
Pancreatitis	1
Gastric fistula	1

viving patients in the local group, subphrenic abscess was a serious and expensive complication of their illness. The average hospital stay for these patients was thirty-eight days. The shortest hospital residence was thirteen days and the longest, 131 days. Sixteen patients were in the hospital for over a month.

It is generally considered that subdiaphragmatic abscess is a disease primarily of the pre-antibiotic era. In 1953, Zaslaw and Sachs[4] said that the prophylactic use of chemotherapeutic agents has reduced the incidence of subphrenic infections. However, in the two Duluth hospitals there were only twenty-one cases of subphrenic abscess in the sixteen-year period from 1937 to 1952, while in the four-year period from 1953 to 1956, there were nineteen cases. Perhaps this is an indication of bacterial resistance to some of the drugs used prophylactically. There was also a significant increase in the amount of gastric and biliary tract surgery done in the two hospitals in the later period.

The average age of these patients was fifty-one years. The youngest patient was twelve years old and the oldest, seventy-eight years old. Sixty per cent of the patients were in the sixth, seventh and eighth decade. It is in this age group that patients are most likely to be subjected to gastric or biliary tract surgery.

The major factors responsible for the subdiaphragmatic abscesses in this group of patients are as follows: gastric resection twelve cases; biliary tract surgery ten cases; biliary tract disease eight cases; ruptured appendix eight cases; perforated peptic ulcer three cases; pelvic cellulitis, hepatic abscess, appendectomy, and lung disease 1 case each. As in other series, lung disease is a rare cause of subphrenic abscess. The one patient in this series had chronic bronchiectasis for years with a basilar lung abscess which ruptured through the diaphragm.

It was not possible from a study of the records to define accurately the anatomic spaces as Ochsner and Debakey[1] did. In thirty-five patients the abscess was on the right side between the dome of the liver and the diaphragm. In nine patients, it was under the left leaf of the diaphragm, and in one patient there was a bilateral subphrenic collection of pus.

In eleven patients (24 per cent) of this series, the subphernic abscess was first diagnosed at necropsy. Some of the incorrect diagnoses considered during the diagnostic investigations of these forty-five patients are listed in Table I. In almost 50 per cent of the cases, the cause of the patient's illness was considered to be located within the thorax.

It is worthwhile to examine some of the symptoms and signs in the patients to see if we may learn how to make the correct diagnosis earlier. Nine of the patients described shoulder-cap pain. Twenty-four of them had local tenderness over the costal margin, either anteriorly or posteriorly, and twenty-three of them had some dyspnea. All of the patients had some temperature elevation. The highest temperature recorded was 106.8° F., and the average maximum temperature elevation for each case was 103.3° F. Leukocytosis was also a common finding. The highest leukocyte count was 39,400, and the average white blood cell count was 21,200.

The x-ray examination is an important means of evaluating a patient suspected of having a subphrenic abscess. In order to obtain the maximum information, posterior, anterior, and lateral over-penetrated films should be taken. A lateral decubitus film will help to determine the amount of fluid above and below the diaphragm, and fluoroscopy should be done to check the motion of the diaphragm. Only a few of the patients in this series had all of these studies done. The results of the x-ray studies are shown in Table II. When present, the findings of a gas bubble with a fluid level under the diaphragm can almost be considered diagnostic. Thirteen of the nineteen patients with pleural fluid had a thoracentesis performed, and in only one patient was an empyema present. The pulmonary shadow present in twenty-four patients is probably largely compression atelectasis. Nevertheless, this shadow was often responsible for directing the

physician's attention away from the correct diagnosis.

Since subphrenic abscess is an infection, it is to be expected that antibacterial drugs would be used liberally in the later patients in this series. Twelve of the patients received no antibacterial drug, while the rest received one or more. Two of the patients received as many as five different types of antibacterial drugs. The drugs used include the sulfonamides, penicillin, streptomycin, tetracyclines, chloromycetin, erythromycin, bacitracin, aerosporin, and neomycin. In this small series no conclusions can be drawn concerning the effectiveness of these drugs. Five of the twelve patients who received no antibacterial drugs died, and fifteen of the thirty-three patients who received the drugs died.

TABLE II. SUBPHRENIC ABSCESS
Results of X-ray Examinations
(45 Patients)

	No. patients
Diaphragm elevated	25
Pulmonary shadow	24
Pleural fluid	19
Gas bubble—fluid level	11
Motion of diaphragm impaired	7
Diaphragm thickened	5
Negative	7
No x-ray	5

It is a well-recognized surgical principle that an abscess should be drained, and a subphrenic abscess is no exception. However, in previously reported series, the mortality has varied considerably with the type of drainage used. For example, Ochsner and Debakey found a 50 per cent mortality for a transpleural drainage, 43 per cent for transperitoneal, and 11 per cent for an extraserous approach. Berens, Gray, and Dockerty[2] noted a 43 per cent mortality for transpleural drainage, 22 per cent for transperitoneal, and 13 per cent for an extraserous approach.

The type of drainage used in these patients is noted in Table III. The high mortality associated with no drainage is apparent, as is the success of the anterior extraperitoneal route. The five cases which were listed as being drained by a transperitoneal route did not expose the free peritoneal cavity to bacterial soiling because there were extensive adhesions obliterating the peritoneal cavity in each case. The author prefers the anterior extraperitoneal approach for most cases because of its relative simplicity. A generous oblique subcostal incision is made down to the peritoneum. The dissection is then carried bluntly in the extraperitoneal plane up under the diaphragm until the abscess is encountered. There are patients, however, in whom local tenderness or x-ray studies indicate the abscess is located posteriorly. In these cases, the posterior extraperitoneal approach through the bed of the resected 12th rib, as described by Ochsner and Debakey, is to be preferred. The danger of contaminating the pleural space is greater when this method is used, however, and one patient who was being subjected to this approach in the lateral decubitus position nearly asphyxiated when the abscess suddenly ruptured into a lower lobe bronchus.

TABLE III. SUBPHRENIC ABSCESS
Type of Drainage and Mortality
(45 Patients)

	No. patients	No. dead
Not drained	17	15
Anterior extraperitoneal	14	2
Transperitoneal	5	0
Posterior extraperitoneal	4	2
Lateral intercostal space	2	1
Posterior transpleural	1	1
Bed of 7th rib	1	1

Conclusion

If a patient after an abdominal operation or associated with abdominal disease develops unexplained fever, leukocytosis, dyspnea, shoulder-cap pain, and tenderness over the lower chest anteriorly or over the twelfth rib, a subdiaphragmatic abscess should be suspected. A posterior-anterior, a bucky, a lateral and lateral decubitus x-ray of the chest should be taken, and a fluoroscopy of the chest should be done. If these show an elevated fixed diaphragm with perhaps some fluid and usually a pulmonary infiltrate above the fluid and especially if a gas bubble and a fluid level are found, a diagnosis of subdiaphragmatic abscess should be made, and the patient should have the abscess drained by the nearest extraserous route.

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Is Extremely Radical Cancer Surgery Justifiable?

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CANCER SURGERY has been extended by many surgeons in recent years well beyond the limits formerly considered radical. The advocates of extremely radical cancer surgery have been challenged by other competent surgeons who question whether the end-results justify the means. The average general surgeon, outside of academic circles, has had to define his own position in this controversy by "making the best guess in the light of insufficient evidence," as Justice Holmes once described the art of living. Should he extend the scope of his cancer surgery; continue the use of conventional operations; or, perhaps, regress and join forces with those who contend that the ultimate fate of the cancer patient is largely pre-determined by his biological make-up and cannot be appreciably influenced by radical treatment?

We have been persuaded that extremely radical cancer surgery is justifiable, within certain limitations dictated by common sense and sound judgment. We also believe that adequate cancer surgery can be performed in a well-equipped, small community hospital. Accordingly, we have extended the scope of our cancer surgery during the past twelve years well beyond the limits formerly considered radical, except in cancer of the breast and cancer of the cervix uteri. We have not yet felt justified in deviating from the conventional methods of treatment of these two types of cancer.

Our approach to the problem of extremely radical cancer surgery has been cautious. One cannot "experiment" or "exhibit the patient maimed" in a community of 25,000 population, where the surgeon must live close to his patients. The mere technical accomplishment of a successfull operation, however challenging it may be, is no satisfaction for the surgeon who must care for his patient personally *ad finitum,* unless that operation offers the patient a reasonable hope of cure, relief of pain, or palliative extension of *useful* life. On the other hand, the surgeon in a small community is strongly challenged to do everything reasonable to offer his patient a hope of cure or useful extension of life. These thoughts have governed our approach to the entire problem of cancer surgery.

We have reviewed our surgery of cancer of the stomach and colon as it is illustrative of the

From the Austin Clinic, Austin, Minnesota.

increasingly radical approach to cancer surgery in general that has been the policy of the Austin Clinic during the past twelve years (1946-1957). The relatively small number of operations performed for these two common cancers will be surprising to those accustomed to academic and urban clinic surgical practice, where referred cancer surgery makes up a large percentage of the surgical patient census. Actually, in our general surgical practice, major cancer surgery accounts for only a small percentage of the 500 to 600 major operations performed each year. It is only when one contemplates the fact that a large number of cancer patients necessarily must be treated under similar circumstances that our meager experiences become at all significant.

Cancer of the Stomach

Our results in the treatment of gastric carcinoma have been very disappointing. When we were using the conventional subtotal gastric resection for carcinoma of the stomach our operative mortality was quite low, but practically all of the patients died of recurrent cancer within six months to a year and a half. It soon became obvious to us that only the fortunate few with small, lymph-node negative infiltrative carcinomas or those with smal carcinomatous ulcers could actually be cured by this type of treatment. For some reason or other, we do not see this favorable type of gastric cancer in our practice: only one patient of the fifty-three with gastric cancer treated by us from 1946 through 1957 had a small carcinomatous ulcer; all of the others had infiltrative and usually massive lesions.

An all-out, ultra-radical approach to the surgical treatment of gastric cancer seemed to be our only alternative to a frank admission of defeat. Beginning rather cautiously in 1946, and then rapidly thereafter, we extended the scope of our operation for cancer of the stomach. Massive, fixed local lesions were no longer considered inoperable; all except the obviously hopeless patients were explored, and only those with distant metastasis, diffuse peritoneal carcinomatous implants and multiple metastasis to the liver were rejected for radical surgery. Emphasis was placed on extensive and careful lymph-node dissection; the routine removal of the greater omentum and spleen, and the removal of adjacent organs, such as the distal pancreas and the transverse colon, whenever necessary. Left hepatic lobectomy has been done on two patients, successfully, along with a radical total gastrectomy.

We believe that this ultra-radical approach to the problem of cancer of the stomach has salvaged a few otherwise incurable patients. It has also afforded much longer periods of symptom-free, useful life for the patients who died later of their cancer or of unrelated diseases. However, our results with the treatment of cancer of the stomach are still very disappointing, as shown by the follow-up studies of those patients operated upon five or more years ago (Table I).

TABLE I. RESULTS IN THE TREATMENT OF GASTRIC CANCER BY RADICAL SURGERY

Total Number of Patients Treated 5 or More Years Ago	26
Palliative resection, gastroenterostomy or exploration only	3
Radical gastric resections	23
Results in 23 Radical Resections After 5 or More Years	
Postoperative (Hospital) Deaths	5
Survived operation but died in less than 5 years	13
Living and well 5 or more years	5

The only patient in our entire series with a small (3 cm.) ulcerated adenocarcinoma is among the five-year survivors. The other survivors all had large infiltrative tumors. One of the five survivors had metastasis to the left lobe of the liver. We believe that this patient deserves special mention. We have not reviewed the medical literature, on the subject, but it is our impression that a five-year survival without evidence of the disease is rare in carcinoma of the stomach with liver metastasis.

Report of Case

Case 1.—E. S., man, aged sixty-four, was operated in November, 1952, for an adenocarcinoma of the fundus of the stomach with a central area of ulceration 8 cm. in diameter. There was diffuse infiltration of the tumor throughout the entire wall of the stomach. The tumor was adherent to the distal pancreas, but there was no microscopic evidence of actual invasion of the pancreas. There was an 8 x 5 x 3.5 cm. tumor in the left lobe of the liver which represented metastasis by continguity. No tumor was demonstrated microscopically in the "several" lymph-nodes which were examined.

The operation consisted of a total gastrectomy; splenectomy; distal pancreatectomy and left hepatic lobectomy. An extensive and thorough lymph-node dissection was done.

The immediate postoperative course was uneventful and the patient was discharged on the twelfth postoperative day. A draining sinus developed in the thoracic portion of the incision about three weeks after discharge from the hospital. This persisted until an extensive sequestrectomy of necrotic costal cartilages was performed.

The patient was operated again in January, 1956, four years after the radical total gastrectomy, because of acute calculus cholecystitis and simple obstruction of the small intestine due to volvulus about old adhesions. Careful exploration of the abdomen revealed no evidence of recurrent carcinoma.

An examination in April, 1958, five-and-a-half years after the original operation, revealed no evidence of recurrence of the gastric cancer. The patient's weight was 40 pounds above his immediate preoperative weight. He was working regularly as a skilled laborer. He was eating an unrestricted diet, taking three good-sized meals a day with two to four small supplemental feedings. He required the regular use of liver extract to prevent anemia and oral vitamin K-1 to maintain a normal prothrombin time. Aside from arteriosclerotic heart disease, which required the use of digitalis, his only medical problem was occasional severe nosebleeds which occurred when he discontinued the use of vitamin K-1.

TABLE II. POSTOPERATIVE HOSPITAL MORTALITY RATES, AUSTIN CLINIC

Operation	Number of Operations	Mortality Rate
*Elective Gastric Resection, benign disease	24	0%
Benign gallbladder disease, all operations	753	1.6%
†Hysterectomy for all causes	456	0.2%
Herniorrhaphy (all types, including strangulated hernias)	990	0.2%
Appendectomy (including perforative appendicitis	990	0.2%

*4 radical subtotal gastrectomies; 2 radical total gastric resections.
†1 death, complete pelvic exenteration, recurrent Ca cervix. 32 days postoperative.

The initial hospital mortality rate of 22 per cent in this small series is, of course, prohibitive even for this type of extremely radical surgery. It is far above the operative mortality for the common types of major surgery in our clinic, as one might expect (Table II). A resectability rate of almost 90 per cent; the fact that more than half of the patients were over seventy years of age, and that all of the patients, except one, had infiltrative carcinomas helps to explain, but does not justify, this high operative mortality. Fortunately, the trend during the past two to three years has been decidedly more favorable insofar as the immediate operative mortality is concerned, although we cannot project any hope of an increased cure rate.

Cancer of the Colon, Rectum and Anus

Our surgical management of carcinoma of the colon, rectum and anus has also been extended well beyond limits formerly considered radical. Large, fixed tumors with extension to adjacent organs are no longer considered inoperable *per se*. The uterus and its adnexae, portions of the bladder, the prostate, the seminal vesicles, the left ureter and kidney, the spleen, portions of the stomach, a part of the diaphragm, and segments of small intestine—have all been removed *en bloc* with the primary tumor at various times. Left hemicolectomy is used for all except the very early carcinomas of the left colon. A careful lymph-node dissection is done and this is usually extended upward along the aortic chain to the lower border of the pancreas.

TABLE III. RESULTS IN THE TREATMENT OF CARCINOMA OF THE COLON BY RADICAL SURGERY

Total Number of Patients Treated 5 or More Years Ago	45
Palliative resections (4); colostomy (2)	6
Radical resections	39
Results in the 39 Radical Resections Followed 5 or More Years	
Hospital Deaths	0
Survived Operation but Died in Less than 5 years	20
Living 5 or more years	17
Untraced	2

Thirty-nine of the forty-five patients with carcinoma of the colon, rectum and anus treated five or more years ago had radical resections, a resectability rate of 86 per cent (Table III). Seventeen of these thirty-nine, or 44 per cent, survived five years. It is interesting to note that six of these seventeen survivors had large, fixed tumors which required the removal of adjacent organs.

There were no postoperative hospital deaths among the 39 patients who had radical resections performed five or more years ago. The law of averages, in the guise of cardiovascular complications, has since upset this favorable record, although the mortality for this type of surgery in the Austin Clinic has remained below five per cent. All operative deaths have occurred in the older age group of patients—seventy years of age and up—who comprise one-third of the total number of patients operated for colon cancer. The deaths have all been due to cardiovascular complications.

Summary

We have presented our experiences with cancer of the stomach and colon as illustrative of an increasingly radical approach to the treatment of those forms of cancer amenable to surgery. Our meager experiences are not statistically informative nor are they significant except insofar as they portray the surgical trend in one of many small communities where, of necessity, an untold number of patients with cancer must receive definitive treatment.

Sorting in the Management of Mass Casualties

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SORTING or triage is the procedure by means of which large numbers of sick and injured are classified by type and the urgency of their condition evaluated in order that they may be properly routed to medical installations for optimum care. Sorting must be repeated at each facility; the site-to-site relocations of target city hospitals and other definitive hospitals throughout the state designated in the Minnesota Civil Defense Medical Care plans. In extensive civilian disasters such as tornadoes, fires, and explosions in industry, sorting may begin close to the site of the disaster, as medical and paramedical personnel should be at hand and available. In thermonuclear attacks on United States targets, the closest-in facility where sorting may be undertaken is the Emergency Treatment Station (ETS), for but little sorting may be accomplished by the First Aid Technicians of the Forward Aid Area Litter Bearer and Rescue Groups.

It is generally accepted that sorting should be done by the most mature surgeon or general practitioner with surgical experience available, in order to conserve professional personnel and supplies including blood for the care of casualties whose recovery may be anticipated. This necessitates adequate intelligence communications to and from Control Centers to Emergency Treatment Stations and definitive hospitals. Information must be repeatedly available regarding the tactical situation, the chain of casualty evacuation, and the status of supporting definitive hospitals with regard to readiness to receive and care for the sick and injured and the hazard of fallout, et cetera. "Early classification permits visualization of over-all medical requirements for large groups of casualties and, on this basis, aids in the decision as to when, where, and what type of therapy should be instituted. Lack of early classification of the sick and wounded en masse leads to confusion, chaos, and increased mortality, for then each patient is individually treated without regard for the more urgent needs of others in the group or for the medical capabilities of the organization."[1] The lives of the many must not be jeopardized by the medical care needs of the few. Effective sorting reduces the time lag between injury and therapy.

The documentation of many extensive civilian disasters is most revealing and informative. Where Civil Defense was well organized and had accepted its full command responsibility in disasters, adequate communications and police traffic control and other Civil Defense activities were in evidence. Unfortunately, sorting at the receiving hospitals was often not too effective, and many wounds in explosions and tornado disasters were closed primarily under unfavorable conditions without adequate debridement and with resulting infections and breakdown. Priorities of treatment, though somewhat less exacting than in the case of thermonuclear bombing, are necessary in the sorting of injuries due to civilian disasters.

The priority system of planning for medical and surgical care has been developed from an intensive evaluation of the experiences of recent conventional type wars modified by the assumed conditions of nuclear warfare. The Department of the Army Technical Bulletin[2] provides that all injured be divided into four groups:

1. Casualties requiring minimal treatment
   - (a) Those who may return to duty after minimal treatment is given
     - (1) Those with small lacerations or contusions
     - (2) Those with simple fractures of small bones
     - (3) Those with second degree burns of less than 10% of body surface and not involving incapacitating burns of face or hands
   - (b) Noneffectives who require domiciliary or nursing care after minimal treatment is given
     - (1) Those with disabling minor fractures
     - (2) Those with burns of the face or hands of less than 10 per cent extent but which interfere with the individual's ability to care for or feed himself

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(3) Those with moderate neuropsychiatric disorders

2. Casualties requiring immediate care:
   (a) Those with hemorrhage from an easily accessible site
   (b) Those with rapidly correctable mechanical respiratory defects
   (c) Those with severe crushing wounds of the extremities
   (d) Those with incomplete amputations
   (e) Those with severe lacerations involving open fractures of major bones
3. Casualties whose surgical treatment may be delayed without immediate jeopardy to life:
   (a) Those with closed fractures of major bones
   (b) Those with moderate lacerations without extensive bleeding
   (c) Those with second degree burns of less than 30 per cent and third degree burns of less than 20 per cent of the body surface
   (d) Those with noncritical central nervous system injuries
4. Casualties whose therapy will be expectant:
   (a) Those with critical injuries of the central nervous system or respiratory system
   (b) Those with significant penetrating or perforating abdominal wounds.
   (c) Those with multiple severe injuries critical in nature
   (d) Those with severe burns of large areas (second or third degree burns of 40 per cent or more of the body surface)

It is estimated that 40 per cent of the total casualties require but minimal treatment and therefore actually have no priority. Most would be ambulatory and therefore in most instances would receive treatment at the Emergency Treatment Station while they are being sorted before the ETS facility is overloaded by the reception sorting and treatment of Group 2 priority casualties and the sorting of priority Group 3 and Group 4 casualties.

Group 2 casualties, estimated to comprise 20 per cent of the total, have the highest priority for surgical treatment in that a short procedure will usually suffice to save a life. The primary function of the Emergency Treatment Station is that of life saving along with sorting and despatch of these patients and those of Groups 1b, 3 and 4 to definitive hospitals.

Group 3 casualties, also estimated at 20 per cent, are those for which delay in treatment, though undesirable and subject to complications such as increased infection, does not endanger life. Definitive treatment will be instituted as soon as hospitals are available and ready for their reception and care.

Group 4 casualties, while considered as expectant and in general hopeless, will not be neglected but will receive treatment if they reach Civil Defense hospitals providing facilities, personnel, equipment and supplies are available. This is contrary to the accepted civilian concept that the most severely injured are given the highest priority and the less severely injured the lowest priority. In mass casualties, it must be accepted that priority of care must be based on the greatest good to the greatest number. The lengthy surgical procedures and the other measures required for one expectant casualty would jeopardize the lives of several casualties in other priority groups. Increased loss of life must be accepted in this group.

Medical care and treatment will be provided for target area casualties, the local population, and Civil Defense personnel at either an ETS or an expanded hospital facility. Priority for all medical care:

1. Maintenance of health and production capability of non-casualty survivors
2. First aid and medical-surgical attention to minimal (walking wounded) casualties to return them to productivity as soon as possible
3. Medical care to women of child-bearing age and children
4. Casualties that reach the medical channels

The thirty-five Emergency Treatment Stations for Minnesota require seventy physicians assigned to sorting to cover the around-the-clock activities of the ETS. All should be thoroughly acquainted with the details of the Minnesota medical care program and all aspects of sorting. The ETS is primarily a life-saving facility for the case of shock, respiratory difficulties—hemorrhage from an accessible site, and other conditions already noted in Group 2 priorities.

Sorting at the site-to-site relocations and other definitive hospitals may usually be accomplished under conditions subject to less confusion and haste than at the Emergency Treatment Stations, and consultation in difficult sorting decisions will be available.

The successful management of large numbers of sick and injured is obviously dependent upon skillful sorting and subsequent emergency and definitive care. Civil Defense is everybody's business—it cannot be bought—we must live it—there is no other way—the full participation of all physicians in the program for survival is essential.

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How Trustees Can Best Serve the Future of Blue Shield

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IN surveying the various Blue Shield plans, we find that the Boards of Trustees vary widely in their makeup, their relationship to the medical profession and in their attitudes toward basic Blue Shield philosophy. Boards also vary in their administrative functions and methods.

I believe that all this variety tends to weaken Blue Shield and that certain very basic principles should govern *all* boards of trustees. Boards' adherence to these principles may decide the future of our plans.

In an article of mine, recently published, entitled "The Future of Blue Shield," I gave examples of the effects that follow upon a lack of unity in the medical profession. I am sure many of you are personally aware of how government-controlled medicine was swept into countries like England, Sweden, Greece, and Japan. I'm also sure that you are following the events in Belgium, France, India and Thailand.

You know that wherever the profession has stood together as a unit, it has been able to make a successful stand against complete government encroachment.

Today, in the United States, since most patients use insurance as a means of paying for their medical care, the profession has an excellent opportunity to make a firm, united stand against our government's further intervention in medical care. All that the doctors need do is to join behind one, single plan that they themselves sponsor and control. (Whether or not the physician approves of insurance is beside the point.) Insurance is here to stay, whether or not we like it. There is absolutely no turning back to the system in vogue that we knew twenty-five or more years ago.

To begin with, the board itself must be under the direct control of the medical societies, either by virtue of a majority representation of physicians on the board or by whatever other effective means of control the societies devise.

It may well be that the societies feel better represented by certain knowledgeable, competent laymen. If so, all well and good. The point is: the medical societies should have the ultimate power. We cannot expect the societies or their physician members to continue supporting the plans unless this power is given them. The reasons for this are self-evident: we are offering our members physician services. We ask physicians to agree to specific fee schedules and, in the Service Benefits plans, we ask the physician to accept our payment as full reimbursement when he treats patients in certain income brackets. The doctor cannot be expected to agree to these provisions unless he has a controlling voice in establishing them.

As to non-medical members of the Board, it should be remembered that physicians taken as a whole are poor businessmen and poor financiers. They need the advice of those who are experienced in these fields. Therefore, there is a need on Blue Shield Boards for business executives, financiers, public relations directors, and actuaries.

How far the additional general public or labor should be represented is a controversial question.

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This is something each plan must decide for itself, keeping the following in mind: other plans, such as commercial plans, also sell medical care insurance. Labor unions, too, set up health plans —but the medical profession plays no part, nor does it pressure to play a part on the governing boards of these organizations. However, just as these organizations should *consult* medicine, so should medicine consult the general public and labor. Board membership on the other hand is a moot point.

I have discussed the composition of the Board and I should next like to speak of the specific things a board may do to improve its relations with the medical societies.

Thus far, only Blue Shield has offered the doctors the control they desire and need. In some Blue Shield plans however, this control has weakened, or has been taken away from the doctor altogether.

It is not uncommon to hear remarks such as the following from doctors:

"Our Society has nothing to say about our local Blue Shield Plan."

"We are never consulted about policies."

"Dr. A. was originally suggested by us for the Board, but he never tells us anything and he no longer represents us."

Then on the other side of the picture, we have remarks from the Plan Directors such as:

"What right did the medical society have to do that?"

"What do we want doctors for when we are discussing coverage?"

All this points out the fact that some of our plans are no longer doctors' plans except in name. Not all of this is Blue Shield's fault, but often it is the fault of the medical society in letting control of the plan slip out of its hands. The fact remains, however, that whatever the reason, *it is the duty of the Board of Trustees to see to it that this control is strengthened or, where necessary, returned to where it belongs—in the hands of the profession.* The key to the correct balance of Blue Shield strength lies in the relationship of the board to the medical societies it represents.

Most important—Blue Shield must never become a third party! It must only continue as an agent of the medical societies, doing for them what they cannot do for themselves—administrative work, devising contracts, and so on. It is up to the medical members of the board to see to it that their medical societies are constantly informed of these activities; and these same medical members must bring the voice of the societies to board meetings.

The medical societies should have the right to nominate the medical members of the Blue Shield Board. Ideally, in small plans, they can perhaps elect them. But no physician trustee should be elected unless he has been at least nominated or approved by the medical society of which he is a member.

Plan trustees must see to it that no major change in policy is approved by the board unless the changes first meet with the approval of the medical societies. This applies to such plan policies as the extent of coverage offered, service benefit levels, fee schedules and so forth.

Of course, some recommendation of the medical societies may not be feasible, because of financial or actuarial considerations. It is my opinion, however, that no item in the schedule of allowances should be set merely on the basis of funds available. If a reasonable fee, one acceptable to the physicians, is not possible, then either that allowance should be *made* possible, financially, or the item should be paid for on an indemnity basis. No physician should be asked to accept as full payment an allowance which he and his colleagues consider inadequate for the services rendered.

Trustees cannot be aware of the thinking of the members of their societies unless they attend their meetings, report what the plan is doing, and ask for suggestions. The medical society should feel that the trustee elected to represent it is conversant with the thinking of that society—that he is, in fact, their representative.

Trustees, too, should encourage their societies to appoint committees to study and consider all matters pertaining to Blue Shield.

Besides having a responsibility to the medical societies, the board also has a major responsibility toward its subscribers. These responsibilities manifest themselves in legal matters, in matters dealing with finances, and with information to subscribers. Briefly, I would like to touch on each one.

The legal obligation is, of course, most important. The corporation is licensed under law. Trustees must therefore see to it that all acts of the corporation are in full compliance with the law. The types of coverage, the wording on

contracts, control of payments, the nature of advertising, of investments, expeditures of funds, etc., all may have legal aspects and must, therefore, be carefully considered.

The Board of Trustees should employ competent legal counsel and should be guided by his legal advice as a matter of protection to the subscribers, the corporation and the trustees. The legal counsel should attend all meetings of the trustees and executive committee. He should have every matter having any possible legal implication referred to him for advice.

With regard to finances—there will doubtless be members of the board who are financial experts. However, the board should appoint a finance committee to make recommendations as to investments. Ideally, this committee should recommend hiring an investment company to handle the details of investing. But the policies governing these investments should properly be decided by the board on the recommendations of the Finance Committee.

As for educating the public, it may seem to some that this is an obligation not within the compass of a board's duties. I do not agree. For the public is, truly, the plan's most intimate concern. The public buys the contracts and their needs and desires must be determined. The public must be kept informed of the activities of the plan; of the contents of their contracts; and, while this may seem obvious, the public also must be educated to distinguish between Blue Cross and Blue Shield. I am sorry to have to admit that even the medical profession needs education on that.

All this brings into play the matter of advertising and literature used for distribution to both doctors and subscribers. Trustees should be familiar with all publications, so as to be able to formulate the general principles governing the makeup of their contents. This would include the contents of any newsletters, bulletins, radio and television programs, as well as talks before medical societies or other groups. Trustees naturally are not expected to prepare this material nor to send it out, but arranging for proper distribution and dissemination is the board's duty. Board members may also arrange speaking engagements for themselves or for their plan executives.

Furthermore, the trustees should attend as many national meetings as possible so as to be abreast of the thinking in other parts of the country. UMS has found it very beneficial to invite not only its medical trustees but officials of its sponsoring medical societies to attend the Annual Professional Relations Conference. This conference has given them an insight into the philosophy and problems of Blue Shield that they could not otherwise have obtained.

Having touched on the board's relationship to the profession and to the public there remains but one major area of mutual interest that is the concern of every trustee: that is the board's relationship to Blue Cross.

Originally, Blue Shield was very small, and it started out five years after Blue Cross. Blue Shield, therefore, had very much to gain by a close relationship to Blue Cross. Because it was larger and had a greater fund of experience, Blue Cross was able to help the young plan immeasurably. Both plans worked closely, both benefited from the sharing of talent and experience and both grew quickly. There was a tendency in those early years, because Blue Cross was the older, more experienced partner, for Blue Cross to become the dominant half of the liaison. Now, however, the situation is changed. Blue Shield has a depth of experience it lacked before and is growing faster than Blue Cross. I believe that the two plans should now be partners on an equal footing. Neither should dominate the other.

If we look at the plans around the country, we see some of them completely divorced from one another. Others are almost completely unified, even to having the same personnel on both boards. Still other plans are separate except for a joint Enrollment Department. This, especially in the larger plans, has often proved a great convenience and saving to both plan and subscribers.

Complete integration, even of just the boards, however, does not seem to me to be in the interest of anyone. Blue Cross is controlled by the hospitals, and Blue Shield by the physicians—and their philosophies differ in so many respects that it is hard to imagine any joint board working smoothly without one plan overpowering the other.

It is very disheartening to view the state of affairs that exists in those areas where the two organizations are more or less one in fact, even if not in theory. Because Blue Shield has been the junior partner, it seems often to act hesitantly, without vigorous conviction in the course it must follow, content to be hand-led and spoon-fed by the elder Blue Cross. What is to be gained by

one plan hiding in the shadow of the other? Blue Shield is no longer in swaddling clothes. It has reached adult state. Both plans are working to serve the community. They should work in harmony, yes,—share those duties that will benefit both plans—but each plan should be master of its own fate.

The first step that should be taken to establish a Blue Shield plan's independence is the appointing of a director separate from Blue Cross. Certainly, when Blue Shield was in its infancy, it could not afford a full time director. Since there was a need to establish a good deal of early planning, much was gained by having Blue Cross' director also serve Blue Shield. But, again, today things have changed—and just as there is much to be gained by having separate boards, so is there much to be gained by each plan having its own director. The duties and responsibilities of each plan have grown to too great a height to allow one man to fulfill both jobs effectively without one being secondary to the other.

These are matters which must be decided by the Boards of Trustees of the plans, but they cannot be decided intelligently unless each trustee is thoroughly familiar with all aspects of his plan's activities. It has been found, for instance, that some boards meet only once or twice a year, and that the operation of the plan is left entirely to the plan director or to the Board's Executive Committee. This is unfortunate. Unless the board meets frequently, how can the trustees keep abreast of what is going on, or how can they expect to decide the proper course of action for the plan in matters that come up from day to day? Executive committees are excellent organizations, but they should meet to handle emergencies, to sift material and make preliminary studies for presentation to the Board itself. In my opinion, the executive committee should not habitually be given the full authority of the board.

By the same token, the plan director should be expected to carry out the board's policies—but the director himself should not be the one to determine policies. Plan policy should be determined by the board and must reflect the expressed desires of the medical societies. The plan director must carry out these desires.

Such matters as co-insurance, experience rating, and service benefits are proper matters for trustees to discuss. Their decisions, however, must reflect the many responsibilities they have to the public and the medical profession. Trustees must decide whether Blue Shield is to be a community plan or a plan for a favored few. But we must keep uppermost in our thoughts, that if Blue Shield does not protect the *entire* community—including the poor risks—the government will step in. When it does, it will not just take the poor risks, but will sweep up everyone without exception. All one has to do is to look abroad to see what will happen if voluntary health insurance fails in this country. I will go even further and say that if Blue Shield should fail—then we shall most assuredly see government medicine moving in to take over.

In conclusion, I think I can safely say that being a trustee does not involve just a name or a title, but entails a mature and substantial responsibility for policies and education. Blue Shield must not fail, but it will unless the plans work in close co-operation with their medical societies, and convince them that the plan is not a third party but only their agent, carrying out certain technical, administrative aspects of the program, the doctors, themselves, have set up.

Now, may I make an appeal to the profession itself? Medicine can no longer be practiced as it was twenty-five years ago. It involves not only art and science but socioeconomics as well. Physicians as individuals and medical societies as a whole must take an interest in the whole problem of rendering adequate medical care. The medical profession has had a 2,500-year tradition of ministering to the sick. It must keep up that tradition and must, itself, take the leadership in programs to ensure proper medical care. Unless it does, the leadership will be taken away by others.

During the past eleven years, I have made two trips around the world and twenty-one trips to Europe (and I'm going again Apirl 30). I have seen what has happened when the medical profession weakened and permitted itself to be thrown off the tracks by a government machine. I have seen the debasing of the standards of medical care. I shudder to think what will happen—in fact, what is happening right now—in this country as a result of the apathy of the medical profession.

As trustees, see to it that your sponsoring bodies are alerted to these problems. And elect to your boards farseeing, capable and energetic people.

2 Park Avenue
New York, N. Y.

The Etiology and Treatment of Esophagitis

● *Severe strictures of the lower esophagus are being successfully treated by adequate gastric resection.*

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IT HAS BEEN STATED that inflammation is the commonest disease of the esophagus. There is much clinical and experimental evidence to implicate the acid-peptic factor in most cases of esophagitis or its sequelae—hemorrhage, perforation and stricture. Other rare causes of esophagitis include agranulocytosis, tuberculosis, actinomycosis and scleroderma. In the past, cases of acid-peptic esophagitis have been referred to as idiopathic even though many of these patients respond to therapy designed for the treatment of the acid-peptic diathesis elsewhere in the body. Surgery is reserved for perforation, hemorrhage, intractability and obstruction (stricture formation) as is commonly practiced for these complications in the stomach or duodenum. It is the purpose of the present communication to discuss the etiology of esophagitis and to re-evaluate the surgical results in eighteen patients treated by a procedure designed to lower gastric acid production and to insure prompt gastric emptying as proposed by Wangensteen.[1,2]

Etiology

Clinical Observations.—As early as 1852 protracted vomiting was described by Trotter as a cause of permanent dysphagia.[3] Complete esophageal atresia has resulted from the pernicious vomiting of pregnancy.[4] Tileston in a valuable article on peptic ulcer of the esophagus published in 1906 held that insufficiency of the cardia allowing regurgitation of gastric juice was essential for the development of the ulceration, hemorrhage or later stricture.[5]

TABLE I. THE ASSOCIATION OF GASTRODUODENAL ULCERATION WITH ESOPHAGEAL STRICTURE

Year	Author	Number of Patients	Number of Gastroduodenal Ulcers
1929	Jackson[16]	3	3
1935	Winkelstein[17]	5	3
1946	Benedict[18]	44	15
1948	Benedict and Sweet [19]	60	20
1951	Wilson[20]	22	10
1952	Friedburg and Clayton[21]	6	6
1953	Winkelstein et al[22]	20	15
1953	Benedict and Gillespie[23]	100	42
1956	MacLean and Wangensteen[2]	18	6

Some have attributed a danger in this regard to inlying nasogastric tubes. However, in none of the cases to be presented can the stricture be attributed to this—in a clinic in which the nasogastric tube has been used extensively. The vomiting which frequently occurs without suction would appear to be of far more danger to the esophagus.

There are other very important clinical observations which implicate the acid-peptic factor in esophagitis and stricture. (1) Gastroduodenal ulcer frequently accompanies lower esophageal stricture (Table I). (2) Those situations known to cause or abet gastroesophageal reflux frequently lead to esophagitis and stricture. The commonest is hiatal hernia. Allison observed sixty-three cases of stenosis among 176 cases of hiatal hernia.[6] Pyloric stenosis is known to disrupt the function of the

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cardiac sphincter. Lastly, certain operations which destroy gastroesophageal continuity lead to esophagitis and stricture formation. These are esophagogastrostomy, the Wendel procedure, and the Heyrovsky and Grondahl operations.[7]

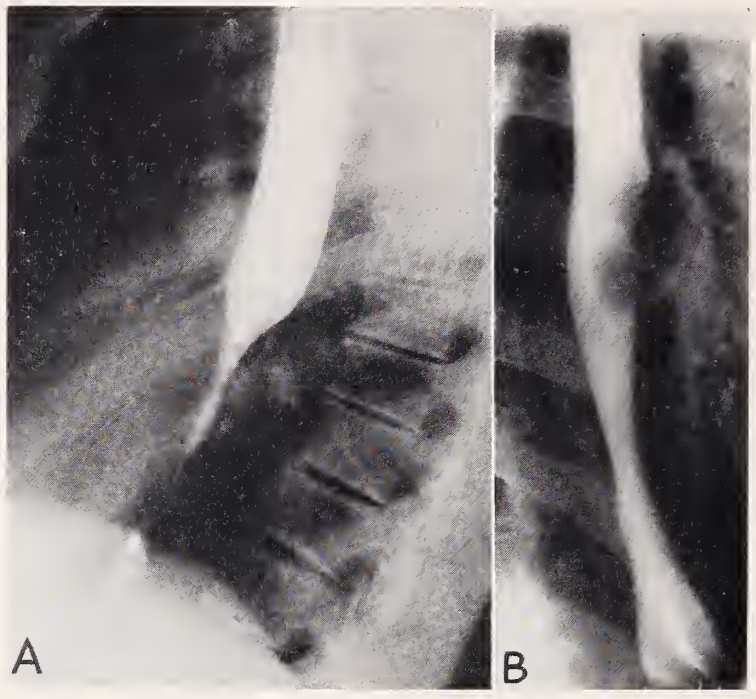


Fig. 1. *Case 1.* (a) Esophagogram made on April 1, 1936, prior to gastric resection during period of dilatations; (b) normal esophagogram, April, 1954. There is no esophageal stricture or delay in passage of thin or thick barium. The patient is asymptomatic eighteen years after subtotal gastric resection.

Experimental Evidence.—There is also extensive evidence of an experimental nature to support the concept that esophagitis and esophageal stricture are acid-peptic linked. Selye[8] was able to produce hemorrhagic esophagitis in rats by pyloric ligation. The production of an insufficient cardia in dogs, either by esophagogastric anastomosis[9] or by pyloric ligation plus histamine in beeswax stimulation produces extensive esophageal irritation and in the latter instance destruction and perforation.[10] The stomachs of these animals remain normal despite adjacent esophageal ulceration and perforation. Prior excision of the acid-producing area of the stomach under identical experimental conditions protects completely against the occurrence of esophagitis or esophageal perforation.

Treatment

Various surgical procedures have been proposed for the management of patients with esophagitis, ulceration or stricture of the lower esophagus. These include esophagogastrectomy with esophagogastrostomy (Sweet,[11] Valdoni[12]) or esophagojejunostomy with gastric bipass (Allison[13]) or jejunal interposition—after excision of stricture between esophagus and stomach (Merendino[14]) and vagotomy with resection of stricture, resection of distal stomach and repair by esophagogastrostomy and gastroduodenostomy (Ellis[15]). Following and in Table II are the results of subtotal gastrectomy for this entity at the University of Minnesota which has, the author believes, two advantages: (1) the procedure is less formidable than any mentioned and (2) excellent results have been achieved over a long period of time and observation.

Case Histories

Case 1.—L. W., a man aged fifty-three, was seen many times at the University Hospital between 1935 and 1939 with complaints referrable to an obstructing and bleeding duodenal ulcer. Dysphagia developed in February, 1936, and an esophagogram revealed a lower esophageal stricture which was confirmed by esophagoscopy. The patient was treated with a Sippy diet and esophageal dilatations once or twice a month until August, 1939, at which time a subtotal gastrectomy was

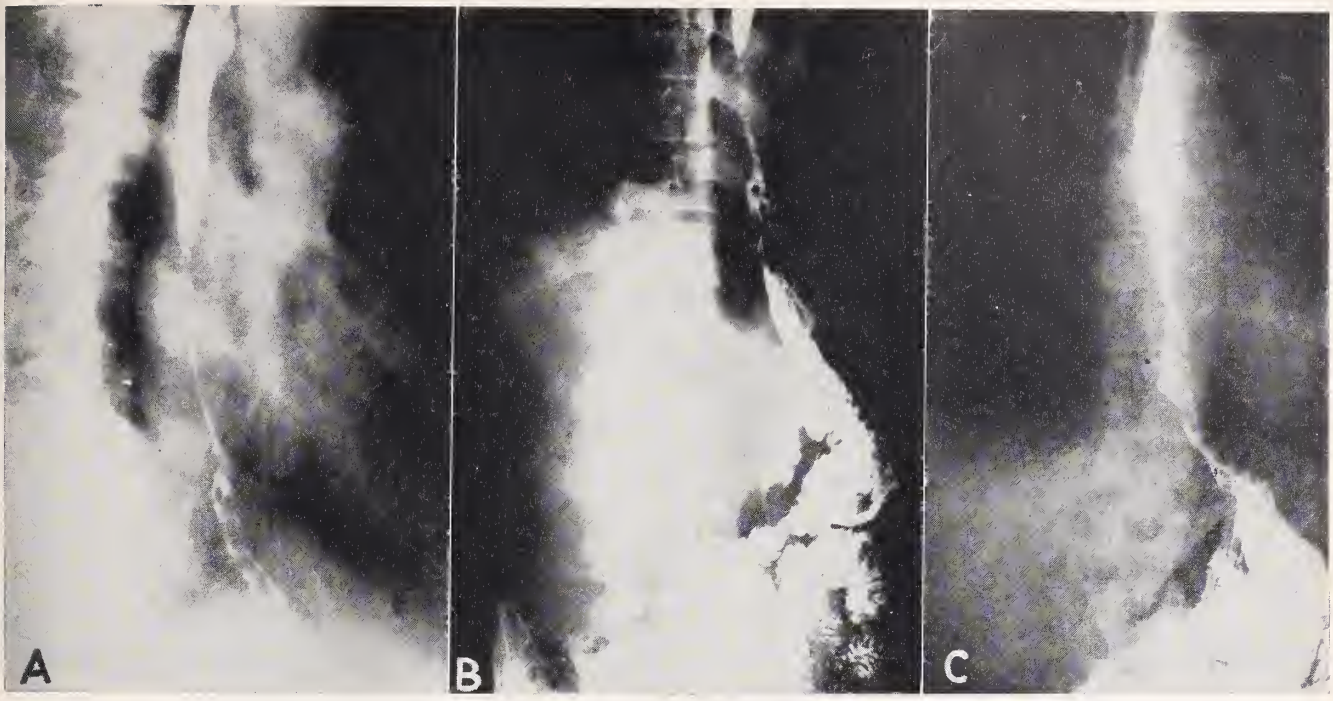


Fig. 2. *Case 6* (a) Esophagogram made in July, 1947 (preoperative), following dilatation to a No. 29 French sound reveals a severe stricture extending from the mid-esophagus to the stomach; (b) esophagogram made March 30, 1948 (two weeks after operation), reveals slight improvement. The patient was greatly improved clinically at this time. (c) Esophagogram made September 4, 1951, reveals no evidence of obstruction. The patient has had no dysphagia since two months following subtotal gastrectomy.

performed for severe gastrointestinal hemorrhage. It was not anticipated that esophageal dilatations could be discontinued following this surgical procedure. However, only two dilatations were required in the convalescent period, whereas in the three and one-half year period preceding surgery, over 100 dilatations had not been successful in controlling the dysphagia. In 1940, a No. 45 dilator was passed with ease as a diagnostic test of esophageal lumen size. The patient has had no recurrence of dysphagia or gastrointestinal hemorrhage during the eighteen-year follow-up period and has not required esophageal dilatation. The patient eats all foods without difficulty whatsoever. Figure 1 illustrates esophagogram before and after subtotal gastric resection.

Case 6.—H. B., a man, aged forty-seven, was first seen at the University Hospitals in 1947 with complaints referrable to a duodenal ulcer since 1911. In 1940 a perforated duodenal ulcer was closed surgically. Six weeks following this procedure dysphagia developed and progressed rapidly so that in two months he lost 40 pounds. A gastrostomy had been performed elsewhere at which time the patient was unable to swallow his saliva.

In July, 1947, an esophagogram was attempted but was unsatisfactory because of the severity of the stenosis. Dilatations ultimately were accomplished by using a No. 5 French ureteral catheter initially which was brought out through the gastrostomy. Esophagogram following dilatation to No. 29 French sound showed a severe stricture extending down from the midesophagus to the stomach (Fig. 2a). Dilatations provoked burning substernal pain. However, he was able to swallow liquids.

In January, 1948, another perforation of the duodenal ulcer occurred which was treated nonoperatively, but was followed by pyloric and more severe, esophageal obstruction. Subtotal gastric resection was performed on March 19, 1948. Prior to discharge from the hospital, a No. 29 French dilator was passed through the stricture. In the subsequent six weeks the dysphagia improved greatly. Whereas, an esophagogram made on March 30, 1948 (Fig. 2b) showed only a trickle of barium entering the stomach because of esophageal stricture, considerable improvement was apparent by May 10, 1948 (two months postoperatively) and barium swallow three years later on September 4, 1951, showed no evidence of obstruction (Fig. 2c). The patient has not experienced any dysphagia since the summer of 1948 and has not received dilatations since that time. He ingests a normal diet without any precaution as to food particle size.

Case 8.—T. S., a sixty-one-year-old woman, was first seen at the University Hospitals on April 18, 1951, with the complaint of dysphagia for one year. This had been preceded by a postprandial heartburn especially when lying down. The dysphagia became progressively more severe so that liquids only could be ingested. A sixteen-pound weight loss occurred in the four months prior to admission, even though she was closely supervised on a bland diet, antacids, and antispasmodics, a regimen which in no way altered the dysphagia.

Gastrointestinal x-ray examination on April 20, 1951, revealed a large, easily reducible hiatal hernia with narrowing and irregularity of the distal esophagus (Fig. 3a). Three months later a lower esophageal ulcer had developed. Esophagoscopy confirmed the diagnosis of esophagitis with stricture. The patient had 22 degrees of free gastric acid on alcohol stimulation. On August 14, 1951, a segmental gastric resection, Heineke-Mikulicz pyloroplasty, and hiatal hernia repair were performed with an extensive excision of the acid-producing area of the stomach. The patient had an immediate and excellent response to surgery and has not experienced dysphagia or heartburn since, except on the rarest occasions when excited.

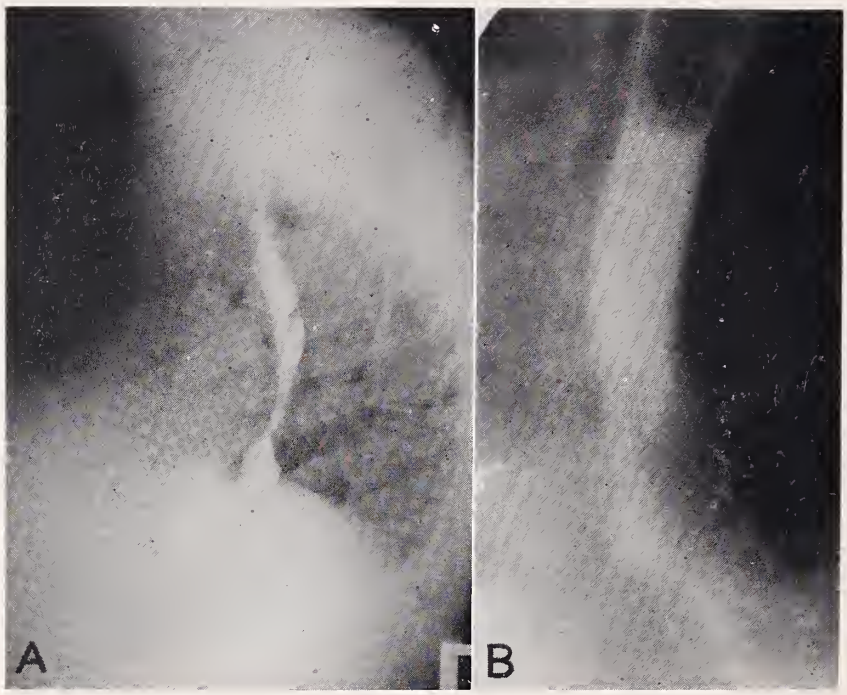


Fig. 3. *Case 8.* (a) Esophagogram made July 24, 1951, shows marked stricture. The patient experienced severe dysphagia and was malnourished at that time; (b) esophagogram made July 29, 1953, shows minimal deformity, and no evidence of obstruction two years following the operation.

Roentgenograms of the esophagus made on July 29, 1953, two years after operation, revealed prompt passage through the esophagus without delay, and without evidence of constriction (Fig. 3b).

Gastroesophageal regurgitation has persisted in spite of hiatal hernia repair. A postoperative gastric analysis made on February 4, 1954, revealed no free acid with triple histamine stimulation. The patient continues without complaint and ingests a full diet at the present time.

Case 10.—F. W., a sixty-nine-year-old man, was admitted to the University Hospitals on May 7, 1952, with the complaint of progressive dysphagia of six months' duration. He was unable to eat any solids at the time of admission and had been troubled with heartburn for many years. An esophagogram taken on May 8, 1952, showed a lower esophageal stricture with hiatal hernia (Fig. 4a). An annular stenosing lesion located at 34 cm. from the upper alveolar ridge was visualized on esophagoscopy. A No. 14 French lumen finder was passed through the stenosed area with considerable difficulty. Biopsy of the strictured area revealed inflammation and a chronic ulcer of the esophagus. Gastric analysis showed the very high free acid on histamine stimulation of 179 degrees.

On May 14, 1952, a tubular gastrectomy with Heineke-Mikulicz pyloroplasty was performed. There was no evidence of hiatal hernia. For two months following the operation the patient occasionally noted that some solid foods "stuck." He was no longer troubled with heartburn. An esophagogram made on July 10, 1952, three months after operation, showed a narrowed area in the lower third of the esophagus with improvement from the previous examination. On February 24, 1954, an esophagogram showed no evidence of stricture (Fig. 4b). The patient is able to eat all foods without difficulty. Gastric analysis since surgery revealed 52 degrees of free acid with histamine stimulation. A No. 41 French dilator passes through the esophagus with ease. The patient does not require dilatations.

Discussion

A total of nineteen patients with lower esophageal stricture have been treated by a procedure designed to decrease acid-peptic irritation of the

lower esophagus. Sixteen patients underwent subtotal gastrectomy, and three were treated with hiatal hernia repair with pyloroplasty. The factor predisposing to lower esophageal stricture was severe dysphagia prior to operation. Six of the remaining patients are greatly improved, and are capable of ingesting all foods with dysphagia on rare occasions (no oftener than once a month).

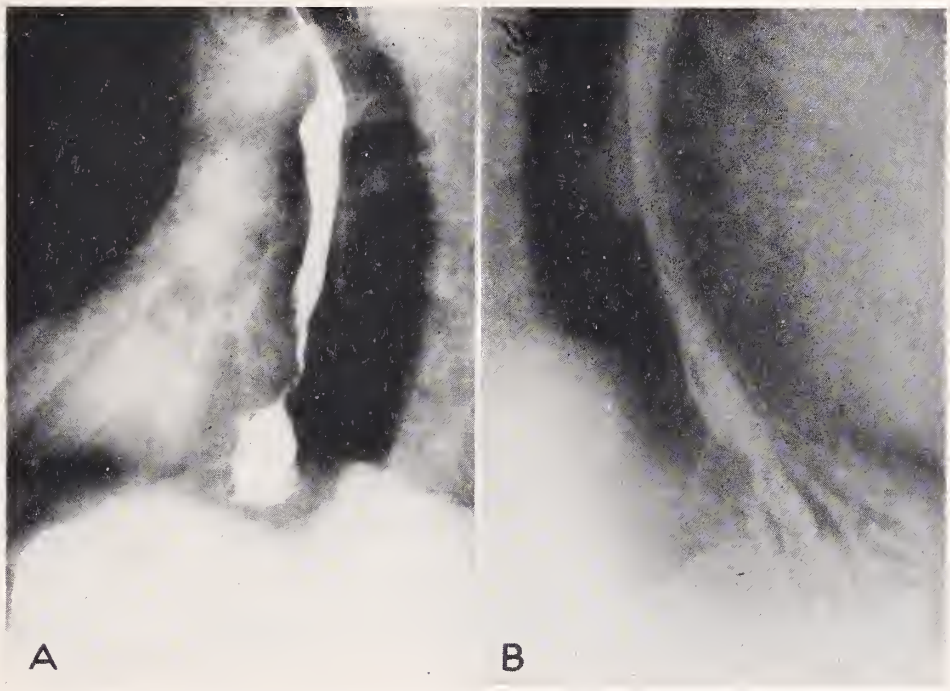


Fig. 4. *Case 10.* (a) Lower esophageal stricture with roentgen evidence of hiatal hernia. The latter was not found at operation on May 14, 1952; (b) normal esophagogram made February 24, 1954. The patient ingests a normal diet without dysphagia at any time.

either gastric or duodenal ulcer in six patients, hiatal hernia in seven patients, both duodenal ulcer and hiatal hernia in one patient and unknown in four patients. One patient (F. O. in Table II) with a severe constriction of the esophagus which extended from the aortic arch to the stomach—the result of the ingestion of concentrated hydrochloric acid with suicidal intent—was also treated by subtotal gastric resection. Esophagograms demonstrated an increase in the size of the esophageal lumen following operation. Unfortunately, after returning home this patient became depressed, refused to eat, and expired fourteen months following operation. With this single exception, esophageal lumen size has been greatly improved or has returned to normal in all patients. Those postoperative esophagograms which have revealed some deformity are greatly improved, and no obstruction to the flow of thick barium has been observed in contrast to the preoperative findings. Symptomatic benefits have likewise been remarkable. Thirteen of the patients have completely normal swallowing with all foods despite

A high gastric acid has been observed frequently prior to operation, which has been reduced to low or zero levels by gastric resection.

The persistence of beneficial effects is evidenced by the long follow-up period in many of the patients (Table II). Esophageal dilatation is usually performed once or twice in the early convalescent period when it is noted that larger dilators pass the strictured area with greater ease. The necessity of insuring a functional lumen by dilatation directly following operation is emphasized, since other observers who failed to find subtotal gastrectomy successful in the treatment of lower esophageal strictures did not employ dilatation in the early recovery phase. Adequate gastric emptying must also be provided. Without adequate emptying, the aggravation of esophagitis, noted clinically and experimentally following vagotomy alone, may result.

That reduction of the stomach's capacity to secrete acid-peptic juice accompanied by provision for ready gastric emptying will minimize, if not eliminate the opportunity for regurgitation of

TABLE II. RESULTS OF TREATMENT OF ACID-PEPTIC STRICTURE OF THE ESOPHAGUS

Patient Number	Age at Follow-up (Years)	Predisposition	Operation*	Follow-up Period (Years)	Swallowing**	Last Esophagogram	Preoperative Free Gastric Acid†	Postoperative Free Gastric Acid
1. L.W.	68	Duodenal ulcer Pyloric obstruction	III	18	A	Normal	38°—F	—
2. C.V.D.	90	Duodenal ulcer Pyloric obstruction	IVA	5	A	Slight narrowing No obstruction	—	—
3. E.K.	72	Unknown	III	9	A	Minimal deformity No obstruction	34°—H	—
4. C.G.	25	Unknown	III	10	A	No stricture No obstruction	60°—H	0°—H
5. V.G.	62	Gastric ulcer	III	7	A	Normal	100°—H	—
6. H.B.	54	Duodenal ulcer Pyloric obstruction	III	9	A	Tapered lower oesophagus. No obstruction	74°—H	—
7. S.N.	79	Duodenal ulcer Hiatal hernia	III	3.5	A	Slight narrowing No obstruction	40°—H	—
8. T.S.	64	Hiatal hernia	Segmental	6	B	Minimal deformity No obstruction	22°—A	0°—H
9. H.S.	48	Hiatal hernia	Tubular + H.M.	3	A	Slight distortion No obstruction	52°—H	0°—H
10. F.W.	71	Unknown	Tubular + H.M.	5	B	Normal	179°—H	52°—H
11. T.N.	75	Duodenal ulcer	III	3	A	Minimal irregularity. No obstruction	52°—H	—
12. O.J.	60	Duodenal ulcer	Tubular + H.M.	4	A	Residual stricture. Improved	71°—H	7°—H
13. A.W.	65	Hiatal hernia	Tubular + H.M.	2	B	Esophageal stricture. Some improvement	73°—H	0°—H
14. A.L.	47	Unknown	Tubular + H.M.	3	B	Esophageal stricture. Some improvement	—	—
15. H.M.	67	Hiatal hernia Pylorospasm	Hernia repair and H.M.	3	B	Normal	—	—
16. H.S.	73	Hiatal hernia	Hernia repair and H.M.	2	A	Minimal deformity No obstruction	40°	—
17. W.C.	56	Hiatal hernia Pylorospasm	Hernia repair and H.M.	2	A	Minimal deformity. No obstruction	93°—H	—
18. M.K.	53	Hiatal hernia	Tubular and H.M.	2	B	Minimal deformity. No obstruction	—	—
19. F.O.	47	Concentrated hydrochloric acid	Segmental + H.M.	1-3/12	C	Slight increase in esophageal lumen	—	—

*Nomenclature: III, ¾ distal gastrectomy with Hofmeister retrocolic gastrojejunostomy.
IVA, Finsterer exclusion operation with removal of the antral mucosa.
Segmental, Segmental gastric resection.
Tubular, Tubular gastric resection.
H.M., Heineke-Mikulicz pyloroplasty.

**Postoperative swallowing:
A, Ability to ingest all foods without dysphagia at any time.
B, Ability to ingest all foods with dysphagia on rare occasions (no oftener than once a month).
C, Dysphagia—improved
D, Dysphagia—no improvement.

†F, fasting
H, with histamine stimulation.
A, with alcohol stimulation.

gastric juice into the esophagus is understandable. The disappearance of strictures which have remained after over 100 esophageal dilatations is not so readily apparent. A study[2] of the depth of scar tissue in the esophagus in acid-peptic stricture has revealed principal involvement of the submucosa and inner muscular layer. The outer muscular layer of the esophagus was uninvolved. In contrast, lye stricture involved all esophageal layers with dense scar tissue.

Summary

1. The clinical and experimental evidence implicating the acid-peptic factor in esophagitis and esophageal stricture has been reviewed.

2. Eighteen patients with esophageal stricture treated by a surgical procedure designed to decrease acid-peptic irritation of the lower esophagus have been re-evaluated. Fifteen patients underwent subtotal gastrectomy and in three hiatal hernia repair accompanied by Heineke-Mikulicz pyloroplasty was performed. In all eighteen patients, complete disappearance (twelve patients, graded A) or substantial improvement (six patients, graded B) in dysphagia occurred. The period of observation following operation ranges from one to eighteen years. Gastric resection was carried out in one patient with an extensive corrosive stricture of the esophagus, with but slight improvement.

3. An accompanying gastric or duodenal ulcer was observed in six patients having acid-peptic strictures of the esophagus, hiatal hernia was present in seven patients, both duodenal ulcer and hiatal hernia in one patient, and in four patients no predisposing factor was detected.

4. Re-establishment of a fairly normal esophagogram following gastric resection was observed in even the most deformed and strictured esophagus in the follow-up roentgenograms which were taken over a period of months.

5. Gastric acid production frequently is elevated in patients with esophageal stricture.

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Vertebral Artery Thrombosis

● *Obstruction of the vertebral artery should be considered in all cerebrovascular accidents; when correctly diagnosed, treatment with anticoagulants is indicated and useful. Here, Dr. Kenefick reports on two cases of vertebral artery thrombosis in which necropsy findings became available.*

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THROMBOSIS of a vertebral artery with resulting infarction of the brain, in the area supplied by the artery, occurs less frequently than thrombosis of any of the other cerebral vessels. However the incidence is probably greater than hospital records and published case reports would indicate.

It is present most often in men of the fifty to seventy year age groups who have hypertension associated with arteriosclerosis of the major vessels or atherosclerosis—either local or generalized. Occlusion of the vessels occurs as the result of atheromatous swelling or rupture of an atheromatous plaque or hemorrhage into a plaque or possibly subintimal hemorrhage. The precipitating mechanism may be the result of medical, surgical or traumatic shock or hemorrhage, causing a temporary hypotension with resulting cerebral anoxia. Emboli, resulting from any thrombo-embolic disease may also cause obstruction, with resulting thrombosis.

In individuals under forty years of age, thrombosis may occur as a complication of systemic diseases such as leukemia, purpura, collagen diseases, polycythemia and many others. The past medical history of a majority of patients, dying as a result of thrombosis of the basilar arterial system, will reveal a history of previous attacks of temporary intermittent occlusion, often diagnosed as cerebrovascular spasm or "small strokes" followed by apparent complete recovery. This symptom-complex has recently been clarified by the publications of Siekert and Millikan[1,2] who suggested the term "Syndrome of Intermittent Insufficiency of the Basal Arterial System." They believe this syndrome occurs more commonly than is generally believed and that it is a common feature in the production of thrombosis of the basilar system. Transitory episodes may occur for months or years, lasting a few minutes to several hours, during which time objective abnormalities are present but which disappear completely with recovery from the attack, leaving no residual complaints.

The principal symptoms include: (1) weakness or paresis of the limbs, (2) visual dimness or oculorotary trouble, (3) dysphagia or dysarthria (both very common), (4) numbness of a limb or one side of the face or body, (5) frequently vertigo and mental confusion. The recognition of this syndrome becomes important clinically because of the relief of symptoms from the administration of anticoagulant drugs and the prevention of a resulting thrombosis and infarction of the brain. The authors also reported a marked reduction in mortality of patients suffering from an acute occlusion of the basilar or internal carotid arterial systems, treated early with adequate anticoagulant therapy.

Another small group of patients who suffer from transient attacks of vertebral artery insufficiency have been found to have a mechanical factor as the causal agent. This consists of turning of the head to one side or the other, together with backward extension of the head on the neck, producing a transient insufficiency of the vertebral artery which may lead to thrombosis of the vessel if frequently repeated or of sufficient duration of time to cause obstruction. This has been termed cervical vertigo by many neurologists but the symptomatology and underlying pathology are probably the same as in the cases reported by Millikan and Siekert.

During the past ten years, cases of thrombosis of the vertebral artery have been reported as a result of chiropractic manipulation of the neck

during treatment. While this manipulation is undoubtedly forceful, normal twisting of the head in a right or left backward direction may cause temporary insufficiency of the vertebral arteries, in some individuals, sufficient to cause symptoms and abnormal reflexes.

Tatlow and Bammer[3] in 1957, reported three such cases and also demonstrated in cadavers, by injection of a radiopaque substance into the vertebral arteries, obstruction of the artery of one side, when the head was turned. This probably occurs only if the vertebral arteries are diseased or if pressure from abnormalities of the vertebral bodies (such as osteoarthritis or osteophytes) is present. In some cases an abnormality of rotation of the atlas on the axis may be present. These authors also reported the symptoms in all of their patients remained relieved as long as anticoagulant therapy was continued.

Recent studies of the anatomy and pathology of the vertebral and carotid arteries, particularly of the vertebral portions and vertebral and carotid arteriography,[4] have helped materially to clarify some of the puzzling symptom-complexes associated with diseases of these arteries. Hutchinson and Yates[5] in 1956 carried out a clinical and pathological study on a series of forty-eight patients dying from cerebrovascular lesions of various types. A radiopaque substance was injected into both carotid and vertebral arteries at the time of the necropsy, tissues were fixed and then both arteries removed throughout their full length. They reported finding: (1) marked variation in the size and diameter of the vertebral arteries, (2) atheroma of the vertebral arteries in nineteen patients, with thrombosis present in three patients, (3) involvement of the vertebral artery in most cases, if atheromatosis was present in the cerebral vessels, (4) intracerebral vessels may be remarkably healthy in spite of evidence of atheroma of the major vessels elsewhere, (5) the presence of a collateral circulation between the vertebral and carotid arteries by way of branches to the trapezius and sterno-cleido mastoid muscles and the occipital artery, (6) stenosis of the collateral channels may lead to occlusion of either the vertebral or internal carotid arteries or both, (7) thrombosis of the vertebral or internal carotid arteries in the cervical portion is fequently present in cerebellar or cerebral infarction when necropsy fails to reveal any abnormality of the intracranial vessels.

Case Reports

Case 1.—Mr. S., aged forty-eight years, worked as a telephone switchboard installer. He was admitted to the hospital for study on March 9, 1954. His chief complaint was that for the past month he had experienced several short attacks of vertigo, each lasting about fifteen minutes, all had occurred while the patient was at work. The day prior to admission he had an attack lasting twenty hours, consisting of vertigo, nausea, diplopia, but no vomiting. Physical examination, including a neurological examination, was essentially negative. Spinal fluid pressure was normal and spinal fluid examination, cell count and serology were normal.

The patient was well for seven days. On the eighth hospital day he became semicomatose and developed a partial left hemiplegia. This was associated with nausea, vomiting, dysphagia, dysarthria and occasional convulsive seizures of a generalized nature. Physical examination revealed blood pressure 132/78 mm. Hg., temperature 99 degrees, pulse 78, and respirations 28 per minute. On neurological examination, a definite left hemiplegia was present with a positive Babinski on the left side. Right hypalgesia of the face and limbs was present. The patient's condition deteriorated very rapidly and he expired March 19, 1954.

Necropsy findings.—The heart weighed 365 grams. The valves and endocardium appeared normal. There was moderate sclerosis of the coronary vessels which were patent throughout. The aorta was mildly sclerotic.

Examination of the brain revealed that the left vertebral artery was completely thrombosed from its point of entrance into the cranial cavity to its point of attachment to the basilar artery. The right vertebral artery was smaller than the left and was patent throughout. The left lobe of the cerebellum was grossly much softer than the right. On microscopic examination of sections of the vertebral artery there was only moderate sclerosis of the wall. The lumen of the vessel contained blood with a central thrombosis and some fibrin.

Case 2.—Mr. O., aged sixty-five years, executive. This patient was first seen November 18, 1954, because of decreased vision in the right eye of short duration, followed by dizziness of a few hours duration the following day, with ultimate disappearance of symptoms. The third day, on awakening, he was unable to swallow, his speech was slow and he appeared lethargic. Physical examination revealed temperature 98.6 degrees, pulse 68, and blood pressure 224/104. The examination was negative except for the following: the right pupil was larger than the left, nystagmus 3 plus to the right, dissociated anesthesia over both sides of the face and left arm and trunk, central facial paralysis on the right, slight weakness of the tongue to the right, positive left Babinski, ataxia of the right arm and the deep tendon reflexes were unequal. Both vocal cords were swollen with limited motion of the right vocal cord. A lumbar tap revealed normal spinal fluid pressure, and the fluid revealed normal cytology and chemistry. The patient's condition deteriorated rapidly and he expired at 4:30 p.m., November 21, 1954.

Necropsy examination.—The heart weighed 465 grams. There was mild to moderate sclerosis of the root of the aorta with marked sclerosis of the coronary arteries with narrowing of their lumina. Sclerosis of the aorta was moderate throughout. The right vertebral artery was much larger than the left, containing a dark red and gray thrombus below the junction with the left vertebral artery. The thrombosed portion included the area of origin of the right inferior cerebellar artery. On microscopic section there was a moderate intimal at heromatosis of the vertebral artery and the lumen was filled with a recently formed thrombus.

Comment

The two cases reported illustrate the most common types of vertebral artery thrombosis and the causes underlying the thrombosis. The first patient, a forty-eight-year-old telephone switchboard installer, had symptoms of intermittent obstruction of the vertebral arteries for six weeks or more, terminating in occlusion of the artery and infarction of the brain. While no clinical proof is available, it was thought the marked movements of the head on the neck (required by this patient's work) was a mechanical factor in causing the intermittent obstruction which led to the fatal thrombosis. He was normotensive and necropsy examination revealed very minimal atherosclerosis of the vertebral arteries and the major vessels.

The second patient, a sixty-five-year-old man with hypertension, had symptoms of acute thrombosis of the vertebral artery for three days, terminating fatally with infarction of the brain. There was no history of previous intermittent obstruction of the arteries and no known precipitating factors leading to the acute thrombosis. Necropsy revealed thrombosis of the right vertebral artery with moderate intimal artheromatosis of all the cerebral vessels.

Recent clinical studies emphasize the importance of early recognition of the syndrome of intermittent obstruction of the vertebral arteries. Long-term anticoagulant therapy apparently relieves the symptoms and may be of value in the prevention of a crippling or fatal thrombosis of the basilar arterial system.

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THE CRYING BABY

(Continued from Page 766)

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Editorials

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NEW PRESIDENT-ELECT

It is with deep regret that the Council has received the formal resignation of Dr. Carl B. Drake of St. Paul as President-elect of the Minnesota State Medical Association.

Dr. Drake was elected to the post after many years of distinguished service to the organization, first as its secretary and then for thirty-four years as editor of this journal. He is relinquishing this office for which he was chosen by the House of Delegates last May, because of a serious recent illness and on the advice of his physician.

We all know that he would have made a fine president. Every member of the Association will concur in the wisdom of his decision, however, no matter how disappointing it may be. Every member will also join with the officers and councilors in wishing for him a complete and speedy recovery and the resumption of all of the duties of an active and useful life.

The By-laws of the Association place the responsibility for filling a vacancy upon the Council in cases like this one. In view of the fact that it is the turn of Ramsey County, by custom and precedent, to nominate the President-elect, the matter was referred by the writer, as Chairman, to the Councilor of the Fifth District, Dr. John P. Medelman of St. Paul.

Dr. Medelman was requested to confer with the men of his district about a successor to Dr. Drake. The Council then unanimously selected Dr. Benjamin B. Souster of St. Paul as its own choice and the choice of the Fifth District to take office immediately as President-elect of the Association and to become President on January 1.

It is certainly unnecessary to make any extensive introduction of Dr. Souster to members of this Association. He has been secretary of the organization without interruption since 1938. He has hundreds of friends among men in practice here and elsewhere, and he has been faithful to every obligation connected with his office. Incidentally, he also has an accumulation of information about every phase of Association work which is indeed unique.

We all regret that it was necessary for Dr. Drake to resign his office, and we know the Association has lost a great deal as a result of his retirement from office. But we may consider ourselves fortunate, too, that a man like our long-time secretary was available when he was needed to fill the place.

C. L. Oppegaard, M.D.
Chairman of the Council

THE FUTURE OF BLUE SHIELD

A pertinent and timely article on Blue Shield appears in this issue of Minnesota Medicine. It was written by Dr. Louis H. Bauer of New York, a past president of the American Medical Association and Chairman of the Board of Trustees of United Medical Service, Inc.

Especial attention is called to the article here, because Dr. Bauer has brought up a number of matters which are of concern to medical societies everywhere. Among them is the important matter of medical participation and medical support.

If Blue Shield plans are to meet the urgent needs of these times, they must have the active and enthusiastic co-operation of all doctors—of general practitioners and of specialists, of the men in the rural districts and the urban districts. The doctors, themselves, must have a voice in the policies of the plans and a personal knowledge of objectives. Such co-operation is indispensable to the quality of service delivered under the plan. It is also indispensable if medicine in America is to avoid the imminent threat of government intervention in the care of the sick.

Dr. Bauer's paper was presented at a Conference of Blue Shield Plans in April, 1958. It is reprinted in its entirety in this issue, and every doctor who is interested in Blue Shield is urged to read it in full.

PRE-INVASIVE CARCINOMA OF THE CERVIX

Virtual elimination of cancer of the cervix as an important cause of morbidity and mortality is the challenging possibility offered to the medical profession. We presently possess the knowledge and the relatively uncomplicated diagnostic and

therapeutic tools to detect and treat carcinoma of the cervix when it is limited to the epithelial layer and is potentially curable. The basic development which stimulated this heartening advance in management of neoplastic disease of the cervix was the discovery that isolated malignant cells observed in cytologic spreads exhibit characteristics which distinguish them, more or less unequivocally, from benign cells. The work of Papanicolaou and his co-workers, published early in the last decade, led to numerous investigations and abundant confirmation of the value of the cervical cytologic smear in detection of cancer of the cervix, invasive as well as pre-invasive.

Maximal utilization of the diagnostic potentials of the cytologic smear involves continuing effort in two directions: one, to create greater understanding by physicians of the problems incident to the use of the smear and the treatment of carcinoma *in situ;* and two, to foster in the female population an appreciation of the desirability of routine periodic pelvic examination, including a cytologic smear.

It cannot be overemphasized that carcinoma *in situ* is a disease which is detected only by the pathologist, and that adequate treatment of the lesion depends on accurate guidance of the surgeon by the pathologist. Smears must be technically satisfactory. Biopsy material must be adequate in amount. It is apparent that proof of the presence of carcinoma *in situ* and, conversely, of the absence of invasive carcinoma, depends upon meticulous examination of a specimen of the cervix obtained by cold-knife conization. Not only must the pathologist determine the presence or absence of invasion, he must also ascertain the lateral limits of the lesion, meaning how far it extends up the endocervical canal or whether the adjacent vaginal wall is involved. Punch biopsies never afford sufficient material to support a valid opinion, nor is it deemed wise to excise the entire uterus prior to definitive histologic study, lest one unexpectedly encounter an invasive lesion more appropriately treated with irradiation.

A recent review of a large series of patients with carcinoma *in situ* treated at the Mayo Clinic yielded clinical data of some interest. The ages ranged from nineteen to seventy-seven years, and the majority (96 per cent) were or had been married. Only 16 per cent presented complaints which might have called attention to the cervix, and in 42 per cent a positive or suspicious cervical smear was the sole indication for biopsy of the cervix. More than 15 per cent of the patients were suspected or proved to have carcinoma *in situ* before their admission to the clinic, indicating the widespread attention being given by the medical profession to the detection of early malignant lesions.

Simultaneous involvement of the vaginal wall is one of the rare but troublesome difficulties which can be encountered in carcinoma *in situ*. It was recognized at operation in nine cases and was satisfactorily managed by excision of an additional segment of vaginal cuff. However, in two cases in which lateral extension of the carcinoma *in situ* was overlooked, invasive cancer was found six and ten years later. In two additional cases, carcinoma *in situ* of the vaginal vault was discovered subsequent to hysterectomy for carcinoma *in situ* of the cervix. In one of these, only cellular dysplasia and basal-cell hyperactivity were present in the vaginal cuff at the time of the initial operation.

A variety of treatments has been directed at carcinoma *in situ*. In all probability, limited treatment such as cauterization after biopsy done in the office can cure many of these early cancers. However, this procedure does not permit definition of the extent of the lesion and hence must be considered inappropriate. There is little disagreement at present that simple hysterectomy, done by either the vaginal or abdominal route, with preservation of the ovaries, is adequate to cure carcinoma *in situ* provided the vaginal incision is proved to circumscribe the lesion. However, more conservative measures occasionally are appropriate in the woman less than thirty or thirty-five years old who wishes to preserve her fertility. Conization has offered a rational method of treatment of such patients, provided rigid adherence to certain safeguards is maintained. These include: (1) understanding by the patient and her husband of the nature of carcinoma *in situ* and of the risk involved in conservative therapy; (2) desire of the patient for future pregnancy, and (3) insistence on periodic cytologic examination of the cervix after treatment. Although it is to be expected that an occasional recurrence will arise, none is known yet in the Mayo Clinic series of about thirty such cases. Admittedly, there is vigorous opposition by some gynecologists to any form of treatment consisting of less than hysterectomy, and we agree that the latter procedure presently represents the

routine which should apply to the majority of patients.

When major surgery is contraindicated because of the presence of other serious disease, the application of radium has proved to be satisfactory. The major disadvantage of treatment with radium is that diagnosis usually is based on the results of punch biopsy; hence, invasive carcinoma might not be ruled out.

The success of any technique for mass detection of unsuspected disease depends on the ease and accuracy of the test used and on its application to as large a proportion as possible of the eligible population. The cytologic smear has proved to yield a number of false negative and false positive readings sufficiently low to make it a satisfactory test. Although the smear can be prepared from cellular material aspirated from the vaginal pool, present evidence indicates that optimal results are obtained from examination of surface scrapings obtained directly from the cervix. Thus, the responsibility for obtaining smears lies with physicians and cannot routinely be delegated to nurses or technicians.

In few localities has mass application of the smear test been attempted. The major reason that most smear programs have been limited in scope is the relative lack of physicians, pathologists and trained technicians to obtain and process the smears. Furthermore, women are not yet sufficiently well informed generally to demand annual pelvic examination, including the taking of a cervical smear. Publicity in the lay press has led to sporadic requests for such examination, but no widespread, sustained program has evolved. Diligent and persistent effort on the part of physicians and of interested lay groups will be required, if such a program is to develop. Promotional and educational material must be designed to combat apathy without arousing unjustified anxiety, and the examination must be readily available to as many women as possible.

There are valid reasons for the assumption that widespread diagnosis and treatment of carcinoma *in situ* of the cervix will result in a significant decrease in invasive carcinoma of this structure, provided patient and physician alike utilize fully our present knowledge.

ELIZABETH MUSSEY, M.D.

ACID-FAST MICROORGANISMS OTHER THAN TUBERCLE BACILLI

From student days, one remembers that the distinguishing feature of *Mycobacterium tuberculosis* is its acid-fastness. The instructor demonstrated slides of "positive sputum" to show the tubercle bacilli stained red with fuchsin. The student even made smears of sputum and applied the Ziehl-Neelsen stain. The microorganisms were easily seen as red rods on a blue background. What the student may not have known is that he was actually staining a nonpathogenic variety of *Mycobacterium* which the instructor had added to an otherwise normal sputum. The harmless species of *Mycobacterium* which was used cannot be distinguished microscopically from the tubercle bacillus. Instead of learning a specific stain for tubercle bacilli, the student actually learned a technique for staining acid-fast bacteria of which *Mycobacterium tuberculosis* is a relatively uncommon representative. There are innumerable bacteria which have a tinctorial and morphologic resemblance to tubercle bacilli.

The Ziehl-Neelsen stain has been widely used for seventy-five years. It is an important aid in the diagnosis of tuberculosis. However, it should be recognized that the characteristic of acid-fastness is not at all associated with virulence. There are in nature many nonpathogenic varieties of acid-fast bacteria which greatly outnumber those that are known to cause disease.

Of the many mycobacteria which can be cultured from various sources only a few well-defined species are usually pathogenic for man. Those recognized at present are *Myobacterium tuberculosis, Mycobacterium ulcerans* and *Mycobacterium balnei.* The latter two may be soil or water microorganisms that are occasionally found to cause lesions of the skin. In addition a few poorly defined groups of *Mycobacterium* are occasionally isolated from or associated with lesions such as the so-called *Mycobacterium kansasii* or "yellow bacillus." The status of this group as a pathogen is not clear.

Mycobacterium spp. are of interest to medical microbiologists not only because they resemble tubercle bacilli morphologically, but also because they have, as do tubercle bacilli, a relatively great resistance to acids and alkalies. As a result the microorganisms are found as contaminants in routine cultures made for tubercle bacilli. Sometimes they may be in pure culture in such prepara-

tions; they may even accompany tubercle bacilli in cultures of exudates.

The soil appears to be a rich source of *Mycobacterium spp.* In one study, acid-fast bacteria were isolated from each of 100 specimens of soil selected from places not frequented by animals or man. They were obtained from widespread regions in the United States that represented great variation in geographic and climatic conditions. The common occurrence of *Mycobacterium spp.* in soil accounts for their presence on vegetation and consequently their constant presence in the gastrointestinal tract of herbivorous animals. The microorganisms readily find their way into dairy products. In the early studies on tuberculosis of cattle, attempts were made to detect tubercle bacilli in milk by staining for acid-fast bacilli. The presence of *Mycobacterium spp.,* later called "milk bacillus" or "butter bacillus," created obvious difficulties since the organisms are morphologically like tubercle bacilli.

Contamination of foodstuff and water by acid-fast bacteria from the soil accounts for the common presence of these organisms in gastric contents. Staining of gastric washings to detect tubercle bacilli is of questionable value because *Mycobacterium spp.* cannot be differentiated from tubercle bacilli. Of considerable importance is the frequency with which *Mycobacterium spp.* in gastric washings appear in cultures made to detect tubercle bacilli. When molds, spore-forming bacilli, or diphtheroids appear as contaminants on cultures prepared for tubercle bacilli, they are discarded as annoying. But when the contaminants are acid-fast—as they frequently may be—some thought is given to the possibility that they may have etiologic significance for no reason except that they are acid-fast.

In laboratories, acid-fast bacteria have been found in tanks used for distilled water, in table-top dust, in rubber hoses attached to water taps, and even in water bottles used for preparing the Ziehl-Neelsen stain. It is enlightening to read the account of a study on blood cultures of tuberculous patients in which it was found that some of the culture tubes had rapidly growing chromogenic acid-fast bacilli that failed to infect guinea pigs. A great deal of work was done with these microorganisms before it was finally concluded that they had no significance as related to the patients. In the same laboratory acid-fast bacteria were cultured from water taps. Had the cultures been contaminated with any other kind of microorganism, nothing would have been thought of it except that it was an indication of poor bacteriologic technique. But when the contaminants were acid-fast, the possibility of their significance was considered seriously.

It is of great convenience to use such a simple procedure as the Ziehl-Neelsen stain to detect tubercule bacilli. However, it should be borne in mind that the characteristic of acid-fastness is shared by a large number of microorganisms found in nature. Only a few species of *Mycobacterium* are known to cause disease in man but all of them should be studied thoroughly. We need to know how readily to differentiate pathogenic from non-pathogenic acid-fast bacteria. We need to know whether or not certain soil microorganisms may find residence in and cause disease in man or animals. We need to know whether or not certain soil microorganisms can cause sensitivity to tuberculin. These and other gaps in our information about *Mycobacterium spp.* must be filled.

Alfred G. Karlson, D.V.M., Ph.D.

VARIOUS ENVELOPES OF PRACTICAL USE TO THE PHYSICIAN

There are many types of envelopes which can be useful to the physician. Envelopes can be helpful in eliminating errors in addressing, speed delivery, reduce postage and procure prompt replies. They can help locate and identify, collect, preserve and protect. In short, a planned system of envelope usage results in convenience, safety and economy for the physician and his staff.

Historically, the envelope has long played an unglamorous but effective role. In such early civilizations as those of Babylon and Egypt, an important factor of organization was the means of recording and sending messages. Indeed, the Babylonians, whose letters were scribed on tablets of clay, developed the first known kind of "envelope"—a sort of piecrust roll of clay to wrap around and protect the baked-clay message inside.

However, the envelope as we know it today did not come into general use until various nations began introducing cheap and efficient postal communication after 1840. Until then, postal systems everywhere had been uncertain and expensive to use.

Usually, when envelopes are mentioned, one thinks of the standard business envelopes (sizes 6¾ and 10). These envelopes can be used to mail

bills, statements and announcements. A smaller envelope (size 6¼) is also frequently used as a reply envelope enclosed with a bill or statement to encourage prompt payment.

The statement envelopes are also available in the window style which saves the user the trouble and time of typing addresses on the envelope when such addresses are already typed on the letterhead, bill or statement form. In a busy office, this enables the nurse to have more time to assist the doctor.

The use of business reply envelopes with statements has helped make payment more prompt and is appreciated by patients as an added convenience.

The most widely used envelopes are gummed and require moistening to seal properly. However, the Self Seal envelope, which seals without moistening, is finding wider use each year. It is easy to seal, more sanitary, and appeals to people who want a minimum of mess in getting out the mail. It is a handy envelope to use in offices where nurses and receptionists do the mail between visits from patients, or when they have a few free moments.

Drug envelopes (2¼ x 3½ inches) have long been used by physicians. The latest type of drug envelope is not gummed. It has a snap-fastener which can easily be closed and opened time after time or pill after pill after pill. The snap-fastener pill envelope is relatively new but because of its reclosure feature is becoming widely used. It is available with or without a window. The window style enables the patient easily and sanitarily to count the pills or capsules remaining in the snap-fastener envelope.

Sterilization envelopes come in a variety of sizes for the sterilization of needles, gauze, syringes and surgeons' gloves. The envelopes for dry sterilization are made from either sterilization blue glassine or rag-content, acid-free paper. For wet (steam) sterilization, the high rag-content, acid-free paper envelope is used. Hospitals, naturally, are the biggest users of sterilization envelopes. Their convenience for handling during sterilization and protection after sterilization makes them useful to every physician.

For filing or mailing of letters, reports and x-rays, there are three styles of envelopes known as the Columbian letter and legal envelopes. For filing, there is the extended tab style, made with ungummed flap either with or without a string and button fastener. For mailing, there is the heavily gummed deep flap style in both letter and legal size.

There are also film and negative pockets which are protectors for x-ray films and negatives. These are made in either single or double pocket style.

The use of the proper envelope can help save time, increase efficiency and, in general, facilitate office procedure for the physician and his staff.

The Washington, D. C. Post Office Building, when it was built years ago, had engraved on it the following inscription which you, too, may find interesting:

THE MISSION OF THE ENVELOPE

Carrier of news and knowledge,
Instrument of trade and industry,
Promoter of mutual acquaintance,
Of peace and good will among men and nations.

Messenger of sympathy and love,
Servant of parted friends,
Consoler of the lonely,
Bond of the scattered family,
Enlarger of the common life.

THOMAS A. HENRY
United States Envelope Company

EDUCATIONAL TELEVISION

Teaching by Television

Before there were educational television stations, many serious statements were made to the effect that television was a medium suitable only for entertainment and that it would be impossible to teach anyone anything at all through this medium. Equally serious statements were made to the effect that television might prove to be the greatest aid to education since the invention of the printing press and movable type. If the latter statement has not been fully demonstrated as yet, it is incontrovertibly true that the former has been fully disproved. It is possible to teach, by means of television, school children, college students, and adults. It is possible to teach, most effectively, a bewildering variety of subjects. Perhaps the most astonishing result of all this is that in perhaps one third of all the experimentation done, it appears that those taught by television do *better* work than those taught in the conventional way, while in almost no cases do those taught by television do inferior work.

The normal method of preparing these research projects has been to divide a large group by the "matching pairs" method into two groups. Each person in the group to be taught in the classroom is matched by age, sex, I.Q., socioeconomic status, amount of schooling, grades in previous schooling

and many other factors, with his equivalent in the group to be taught by television. Then using the same teacher, same textbooks and the same materials, one group is taught in the classroom in the conventional way, the other by television.

Kumata, of Michigan State University, has done an abstract and analysis of some seventy-one such controlled experiments. In twenty-four of these experiments, those taught by television did significantly better work than those taught in the conventional way. In *none* did the television students do significantly worse work. Subject matter in these and other experiments ranged quite literally from A for Accounting to Z for Zoology. Numbers involved ranged from small groups of fifty or so up to experiments by the Army which included thousands of participants. Geographically, experiments have taken place all over the United States and Canada. Subject matter has included not only lecture material but laboratory work in physics, home nursing techniques, typewriting, piano playing and other manual skills. Science, the Humanities, the Arts, Modern Languages and vocational skills all can be, and have been, taught successfully by television. Moreover, in such measurements as have been made for both retention and recall over varying periods of time, television students seem to be at no disadvantage.

Experiments have been performed in television teaching in the elementary grades and in university graduate schools with apparently excellent results at both levels. One of the most significant (and least publicized) of these continuing experiments is that going on at the University of Texas' Dental College at Houston. Here the entire first two years of the three years of training are done by closed-circuit television, with complete success according to the Dean of the College. Indeed, the Dean once told the writer that the experiment was so successful in an educational sense that, even if it cost twice as much as conventional instruction, he would still insist that the television training be retained. In fact, of course, very substantial economies in both money and teaching time are being realized.

To sum up this particular section, let these points be made very clear. First, a very large amount of research on teaching by television has been done and an even larger amount is now in process. Second, almost without exception this research indicates that television teaching is at least as effective as conventional methods of instruction and in many cases shows a marked superiority. Third, most educators involved in this experimentation become enthusiastic supporters of teaching by television. Fourth, the quality of instruction does not suffer from this method and may actually improve as a result of it. Finally, the economic and social consequences of teaching in this way may be of tremendous importance to the educational future of our country.

JOHN C. SCHWARZWALDER

BIRD MIGRATION

Among the earliest recorded observations of natural history phenomena are those of bird migration. Primitive man saw in the departure of the birds a sign of the beginning of fall and winter and greeted their return as the harbingers of spring. Migration is mentioned several times in the Bible, in the writings of Homer, Hesiod, Aristotle, Pliny, and others. Indeed, some of the "observations" of Pliny, in part compiled from Aristotle, have persisted down to the present day. One of these, the hibernation of swallows, crops up periodically in quasi-scientific literature. It has no basis in fact, yet probably because the winter home of the chimney swift—which is not a swallow though often mistaken for one—was unknown, this very plausible explanation of their disappearance each fall readily gained credence, engaging the support of such reputable scientists as Linnaeus, Buffon, and Cuvier.*

Throughout the ages, the enigma of bird migration has attracted the attention of the world's most famous scientists. However, detailed and exact study of the periodic movements of birds is the product of more recent times.

Several theories have been advanced to explain the migrations of birds. Without going into details, it appears quite evident that no one of them is adequate to explain migration in all its mysterious aspects. Some of the factors that are certainly involved in the yearly movements of birds are: (1) available food, (2) suitable nesting sites, and (3) climatic conditions. At first sight, it might seem that available food would be a universal factor in migration, yet there are numerous examples of a species starting out on their periodic journey and leaving areas of adequate food supplies. Upon arriving at their destination, they starve to death or lead a precarious existence for

*The winter home of the chimney swift was discovered in 1944.

several weeks in a region of meager food supplies. The early arrival of the horned lark can hardly be explained on a basis of either suitable nesting site or climatic conditions. Unseasonable weather frequently results in the loss of their first breeding efforts. Being primarily a weed seed eater, the bird finds poor gleaning where the ground is completely covered with snow. Nor is a snow-covered field a site that would stimulate competitors.

Most migrations take birds between a northern summer (breeding) home and a more southern winter home. Some birds, such as the blue jay, might migrate not at all or only a short distance; others, such as the Arctic tern, may fly as much as 25,000 miles in their yearly perigrinations. It is the still-unsolved problem of orientation that has most intrigued both the serious student of birds and the more casual bird watcher. None of the theories that attempt to explain the extraordinary orientation ability of birds gives a wholly satisfactory answer. It seems probable that numerous factors may be involved since different birds solve the problem in different ways. Visual clues, orientation to the sun's position, an electro-magnetic sense, sensitivity to infrared, companionship of older birds are inadequate explanations for some, or many species. The causal stimulus for the migratory urge is likewise the subject of several unsatisfactory theories. The Northern Ancestral Home Theory, the Southern Ancestral Home Theory, and the Theory of Photoperiodism in combination or singly leave too many unanswered questions to be acceptable generalizations.

Man continues to probe for the answer to the riddle of bird migration by means of the various techniques at his disposal: banding, hormone injections, regulation of light quality and quantity, alteration of metabolic rate, et cetera. As slowly and painstakingly he puts together the fragments of his search, the phenomenon of bird migration, with its tantalizing precision, brings to modern man as to primitive man, the thrill and hope of the earth's spring awakening.

Sister St. Mark Wirtz, M.S.

THE PREFERENCE QUESTION

Electrical Industry

What is "preference," that word you hear so often among people in the electric industry? This country was founded on rules that are the opposite of "preference" . . . usually we talk about the idea of equality for all. But on federal statute books, the law says that "preference in the sale of . . . power shall be given to . . ."

And who do you think is on the "preferred" list? Is it people with brown eyes who live on streets with odd numbers? No, the law says that preference in the sale of government-produced power shall be given to the electric systems of co-operatives, municipalities and other groups that do not pay normal taxes or operate under the careful regulations which apply to electric companies like ours.

These "preference" laws make the customers of an investor-owned electric company "low man on the Totem pole" when it comes to buying electricity produced at a federal project. The customer of an investor-owned electric company pays taxes like everybody else—and then some. He pays his own electric taxes, and those of people in the "preferred class" as well.

Eighty per cent of the American people are served by these investor-owned electric companies. Yet—because of the preference laws—these 80 per cent are discriminated against in the distribution of power produced by the United States projects their tax dollars built. There's nothing new about preference in the sale of federal power.

By 1933, preference was in full bloom. The Tennessee Valley Authority was directed by law to give preference in the sale of power to "states, counties, municipalities, and co-operative organizations of citizens or farmers not organized or doing business for profit." The language of the law put investor-owned companies in line for federal power only after the co-ops and similar groups had received their allotments. And—it put the federal government into the power business with both feet.

Fortunately, however, it is not too late to remove this strange word "preference" from American lawbooks. The job can be done if tax-paying electric companies and their employes will explain what preference is all about. Americans are great believers in fair play and in majority rule. Preference violates both.

Why, the people will want to know, should 134,400,000 Americans be taxed to provide subsidized federal power for a favored minority of 33,600,000 "preference customers?"

Don Underwood

President's Letter

WHO PRACTICES MEDICINE?

Do you think that just because you are the only ones who have an M.D. after your names that you are the only ones who practice medicine? You are not. Everyone who can read and write and talk is practicing medicine. What is your patient doing when he passes your prescription on to his friends? What is the visitor in the hospital doing when he tells your patient about his Uncle Joe who had symptoms "just like yours, and he was dead in a week," or tells him, "That is not the way MY doctor does it"?

What is the patent medicine company doing which advertises its medicine as being good for indigestion, heart burn, gas, and bunions? What does the barber do when he rubs dandruff remover on your scalp? What does the chiropractor do when he rubs your back? What about the shoes which relieve backache and the salesman who puts in arch supports as an extra?

Then there is the "reflexologist" who presses and twists feet for everything from pituitary troubles to constipation. And is it not practicing medicine when "high colonic irrigations" are given, as advertised in some of the papers? Who is practicing medicine when your patient goes to the drug store and buys one of the thousand and one laxatives she can find there, or gets a preparation for "feminine hygiene"? What is it when the fat man buys a girdle (called a brace) which not only holds his stomach in for him but relieves his backache—"Look trim, take years off your age" is the sales pitch in this case. "Pink pills for pale people" is a classic.

And how do you feel when you mildly suggest cool packs for a high fever, only to find the next day that Aunt Sally thought that hot packs were better, so the family used hot packs and the patient promptly recovered? Surely the popular magazines and some of the popular columnists are practicing medicine, not to mention the medical columnists in the daily paper. Why is it difficult to put eggs in a reducing diet? Because a ladies' magazine published an article stating that eggs contain cholesterol and so increase arteriosclerosis. Even the *Wall Street Journal* puts vaccination against colds on its front page.

This type of mostly personal, partly public practice of medicine has always been present. It is one of the inalienable rights of mankind—perhaps the pursuit of happiness. Some people are harmed by it, but many are happier with it. What are Doctors of Medicine to do about it? The best solution is to recognize that this type of practice, like the weather, will always go on. When things go wrong, sick people have always finally come to a physician. They probably always will. When they do come, the physician must recognize that his is the position of real trust. No matter what has gone before, he must appreciate the inherent dignity of the individual and treat the patient as he is. The physician cannot hold back from his position of trust, he can only try to pick up the pieces and try to get them back together. The patient is not always right, but he is always human and is always worthy of absolutely the best we can give. If we can always give the very best, and always as to a person worthy of respect, then the foibles of the people remain in their proper place, and medicine will always retain the respect it deserves.

Horatio B. Sweetser

President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

DOCTOR VOLUNTEER LAG FACES DRAFT BOARD CHECK

Physical examinations for a token number of draft vulnerable physicians may be ordered by selective service in the near future.

The purpose of this gesture is to get more of this group to volunteer for medical corps commissions and early medical duty. Up to the middle of September, only 400 of the current crop of interns had informed the Defense Department of their willingness to begin active service next year. The quota is 1,000. A greater degree of success was experienced by the Pentagon on applications for deferment to embark on residency training. In only two major specialties—otolaryngology and psychiatry—did the demand fall below supply of billets offered by Army, Navy, and Air Force. Although the September 15 deadline is past, interns may still submit requests for commissions and active duty, but the longer they wait, the slimmer will be their chances of donning uniforms on the date of preference.

HEALTH INSURANCE GROWTH FOR SENIOR CITIZENS INCREASING

The number of older aged persons with health insurance is growing at a much faster rate than the senior citizen population itself, according to a newly published survey by the Federal Government.

A June, 1958, study of the U. S. Department of Health, Education and Welfare reports that a greater percentage than ever before of the older aged population is now protected by voluntary health insurance plans.

The senior citizen population is increasing at a rapid rate. Today, there are nearly 15 million Americans who are sixty-five years of age or over. This figure is expected to rise to 21 million persons by 1975.

The government study shows that the number of Americans sixty-five and over increased by 13 per cent from March, 1952, to September, 1956, while the number of senior citizens covered by health insurance went up 56 per cent. These figures do not include persons in institutions, such as homes for indigent care.

The growth trend held true over the 1952-1956 span for each age bracket among older persons. Thus, the number of persons in the sixty-five to sixty-nine age bracket increased by 7 per cent, while the number of insured grew by 40 per cent. In the seventy to seventy-four age class, the total population went up 15 per cent and the insured increased 68 per cent. The number of persons seventy-five years old and over climbed 18 per cent, while the insured portion of that age group rose by 87 per cent.

The government study also pointed out that 26 per cent of the population in their senior years, or one out of every four persons aged sixty-five and older had health insurance in March, 1952. By September, 1956, this proportion had climbed to better than one out of every three (37 per cent).

In recent months, top U. S. medical and insurance spokesmen have drawn attention to the need for more adequate health insurance coverage for senior citizens.

Dr. F. J. L. Blasingame, Executive Vice President of the American Medical Association, said last May that financing health care for our older age population was the major problem which voluntary health insurance and medicine must solve jointly.

Morton D. Miller, Chairman of the Health Insurance Council, a federation of insurance associations, last August stated that "the extension of coverage for our senior citizens" was one of two major problems facing health insurance. He listed rising medical costs as the other.

Health insurance is being extended to more and more older persons in a variety of ways.

One method is by permitting workers to continue their insurance under group policies (usually available through the place of employment or union sponsorship) after retirement, or to convert their group coverage to an individual policy. Another is the issuance of new insurance to groups of older persons and to individuals at advanced ages.

Still another is a type of health insurance that

becomes fully paid up for life at age sixty-five, thus enabling the policyholder to pay for his protection during his younger, more productive years.

SEX AND LONGEVITY

The life expectancy at birth for women, in 1956, was more than six years higher than for men. The age adjusted mortality rate for men, 9.6 per 1,000 population, exceeded the corresponding rate for women by over 50 per cent. This better record for women results from the more rapid decline of their mortality since 1900, rather than from any increase in the death rate among men. While the death rate for men dropped from 1900 to 1956 by almost one half, the corresponding decline for women was much larger —just under two thirds. The mortality differential between the sexes is now wider than at any time in the history of this country.

So states a recent issue of the Health Information Foundation's monthly publication, *Progress in Health Services.*

Excess mortality in men is characteristic of nearly all leading diseases, but the widening of the differential, to a considerable extent, has been associated with a shift in the leading causes of death, from the communicable diseases at the turn of the century to the degenerative diseases today.

Causing an excess mortality in men of 11 per cent in 1900, heart disease after 1920 was responsible for a steady increase in the differential, reaching 78 per cent by 1955. Mortality from heart disease among men is currently more than twice the rate for women over the entire age range of thirty-five to sixty-nine.

The highest excess of male deaths among leading causes occurs among accidents. It is greatest —over 500 per cent—at the age range of from twenty to twenty-four. This excess cause of male deaths has declined steadily since 1900, largely due to the drop in fatal work accidents which take male lives almost exclusively.

The cards are evidently stacked against the male population, since the stillbirth rate for male infants is 12 per cent higher than for female, and disparity rises to almost 30 per cent in the neonatal death rate within twenty-four hours after birth.

Diabetes mellitus is the only major disease in which the age adjusted mortality rate is higher for women than for men, the death rate for this disease being over 35 per cent higher for women than men.

These differences exist in all segments of the population and are greater in larger population centers. If current trends continue, women in the United States will outnumber men by 138 to 100 by 1975.

UMW SAVES MONEY BY RESTRICTING FREE CHOICE

The United Mine Workers Welfare and Retirement Fund in its annual report claims savings of $1,448,909.97 compared with 1956-57 as the result of policy limiting payments to "physicians and hospitals whose services are determined . . . to be necessary and essential . . ."

A reduction of 2.4 per cent in these expenditures was being effected without constricting eligibility coverage while medical care and hospitalization costs were going up. During the fiscal year ended June 30, 1958, the outlay totaled $58,-136,684.16.

Without explicit mention of policy differences with organized medicine, the annual report stated:

> "Since the Trust Fund procedures limiting Fund payments to physicians and hospitals necessary and essential in providing authorized Fund services became effective, Fund experience shows that the great majority of physicians understand fully the Trust Fund's position and desire to co-operate."

CHIROPRACTIC CLIMBS VA BANDWAGON

Chiropractic received a shot in the arm at the recent American Legion national convention in Chicago. Seventeen state delegations put in resolutions calling on Veterans Administration to recognize and pay bills of chiropractors to whom beneficiaries may go for treatment, in their exercise of "free choice."

Supporters of chiropractic, in a roll-call vote, marshaled 929 votes against 2,006 opposing recognition. The seventeen states sponsoring resolutions represented an aggregate of 1,201 votes, but many delegates abstained from voting or acted independently (total delegate strength was 3,057 at the 1958 convention).

Observers believe that while American Legion endorsement of chiropractic would not be decisive, as far as VA recognition is concerned, the cult has enough supporters in Congress to exploit

a boost given by as influential a body as the Legion.

There is the possibility that this issue may become a bargaining point, or a sort of secret weapon tending to forestall or blunt further attacks by AMA on provision of medical benefits to veterans with non-service-connected disabilities.

Hospitalization of Veterans Reaches All-Time High

In addressing the convention, VA Administrator Sumner G. Whittier left no doubt that hospitalization of veterans (two-thirds of whom are non-service-connected cases) is at an all-time high and continuing upward. Sample statistics, all breaking old records:

Patients in hospital—111,000
Doctors, nurses and other staff personnel—147,000.
Sum being spent this year for in-patient care—$717 million
Sum spent last year for maintenance and repair—$44 million

STEEL MAY ENTER MEDICAL CARE FIELD

A system of hospitals and clinics comparable to that of the United Mine Workers is expected to receive strong consideration by the United Steel Workers of America.

Appointment of a committee to investigate the feasibility of this project was authorized at the Union's recent national convention in Atlantic City.

UMW's Welfare and Retirement Fund is financed by mine operators' 40-cents-a-ton contribution. A parallel program for steel workers would also be paid for in full by the employers. At present, they share equally with labor the cost of health insurance premiums.

FEDERAL DISABILITY PAYMENT APPEALS INCREASING

A sharp rise in the volume of appeals from applicants denied Social Security benefits has been reported by the Social Security Administration. Most of the appeals appear to be based on the disability section enacted two years ago.

During the past two years, the Social Security Administration staff of referees has quadrupled. Under this provision, a person determined permanently and totally disabled may start drawing at age fifty the social security payments to which he otherwise would be entitled at sixty-five.

A still larger increase in appeals is expected after next January 1, because of a new law that makes dependents of disabled workers eligible for payments, which they were not under the earlier law. An important cause of the increased appeals, according to Acting Social Security Commissioner William Mitchell is a misunderstanding of the law on the part of applicants. Many of them believe that if their impairments keep them from their usual jobs, they are entitled to benefits. Explains Mr. Mitchell:

"The main test . . . is not what kind of work a disabled person can do but whether he can do a substantial amount of work of any kind. . . . Where a person's disability is not sufficiently severe to meet the explicit requirements of the socal security law, the claim must be disallowed."

SOCIAL SECURITY PAYMENTS FOR MEDICAL CARE SOARING

Vendor payments approaching $30 million were made to the nation's physicians, hospitals, pharmacies and other suppliers of services to men, women and children receiving social security benefits in July, 1958. This is disclosed in latest reports of Social Security Administration.

Health care of the aged accounted for approximately $14 million. Persons on relief comprised next largest group, $7,087,000. Next in order: Aid to dependent children, $4,335,196; aid to permanently disabled, $2,489,639; aid to blind, $459,289.

States with largest outlays for medical care vendor payments are: New York, Illinois, California, Massachusetts.

NEW AGING PROGRAM ANNOUNCED BY AMA

A promise of more useful and productive lives for the aging population has been made by the American Medical Association's Committee on Aging.

This assurance was given to a medical society planning conference in Chicago as part of a two-fold program of individual and community action to achieve these ends.

In summarizing three years of concentrated activity in the field of aging, the committee placed great stress on individual action.

"The major scourges of aging man are largely the result of faulty diet, flabby bodies from poor hygiene, excessive fatigue, and aimless living."

The role of the community in helping the aging was outlined by Dr. Frederick C. Swartz, Lansing, Michigan, committee chairman, in a six-part program. Designed to supplement individual health plans, the program calls for:

Stimulation of a realistic attitude toward aging by all people. Extension of effective methods of financing health care for the aged. Expansion of skilled personnel training programs and improvement of medical and related facilities for older people. Promotion of health maintenance programs and wider use of restorative and rehabilitative services. Amplification of medical and socio-economic research in problems of aging. Co-operation in community programs for senior citizens.

Dr. Swartz said:

"It is the duty and responsibility of the state and county medical societies to study the situation of the aging population in their own states.

"The panorama is rapidly changing and if the state and national committees on aging work hand in hand, we may find an answer for many situations before they become problems."

The American Medical Association hopes these programs will provide a foundation upon which a "new world of aging," reaffirming the worth and responsibilities of individual and family, can be built.

TRAUMA TO THE LIVER

(Continued from Page 760)

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MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

MINNEAPOLIS MAN SENTENCED TO EIGHT-YEAR PRISON TERM ON ABORTION CHARGE

Martin P. Schmit, fifty-two, stood trial on September 24, 1958, before the Hon. D. E. LaBelle, Judge of the Hennepin County District Court on a charge of abortion, a criminal complaint against the defendant having been signed by a representative of the Minnesota State Board of Medical Examiners. The victim, unmarried, thirty-four years old, testified that she called the defendant shortly after she had missed her menstrual period in June, 1958, and arranged with him to perform the abortion the evening of June 27, for the sum of $350. The woman stated that Schmit appeared at her apartment that evening and aborted her by the use of a speculum and probe. Two Minneapolis detectives testified that they were watching the defendant's apartment and followed him to the woman's apartment. When the defendant was observed departing from the apartment house, he was taken into custody and numerous medical instruments plus $369 were found on his person. A resident doctor from Minneapolis General Hospital then testified that from his examination of the woman the day following the abortion, he determined she was pregnant and that there was evidence of some trauma to the cervical lip indicating forceps marks.

Schmit took the witness stand in his own behalf and admitted he went to the woman's apartment but stated that after he had opened her up with a speculum he found that she was not pregnant and did nothing further to abort her. Schmit admitted that he had performed some twenty abortions over the years and that he had one prior felony conviction for abortion. The defendant further admitted that none of the instruments found in his possession the night of June 27, were used in his trade as a tool and die maker. After the closing arguments were made by the attorneys, Judge LaBelle charged the jury as to the law in the case and the jury, after deliberating for some fifty minutes, brought in a verdict of guilty of the crime of abortion.

The defendant, who has no medical training whatsoever, appeared before Judge LaBelle on September 29, 1958, at which time he entered a plea of guilty to the charge of one prior felony conviction, having received a four-year prison sentence for abortion in Hennepin County District Court on March 17, 1949. Schmit was then questioned by Judge LaBelle whereupon the defendant stated that he is unmarried and was born in South Dakota on January 5, 1906. Schmit said he has lived at 1500 Park Avenue, Minneapolis, since 1951 and that he had purchased his medical instruments many years ago from the estate of a deceased physician in Watertown, South Dakota. Judge LaBelle then adjudged the defendant guilty by his conviction and by his plea of guilty to the prior conviction and sentenced him to be confined at hard labor in the State Prison at Stillwater until discharged by law or competent authority. Inasmuch as the defendant had one prior felony conviction, he will be imprisoned for a term of up to eight years.

Special Committee Report

Survey of "Cardiovascular Disease in Industry" in the State of Minnesota

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Heart Disease Control Program
Minnesota Department of Health

The Minnesota Department of Health, in conjunction with the Heart and Tuberculosis Rehabilitation sub-committee of the Minnesota State Medical Association, conducted a study on "Cardiovascular Disease in Industry" during February, 1958. It was believed that factual information on the size and extent of the problem of heart disease in industry would be very useful in formulating specific recommendations on rehabilitation. To get this information, the Minnesota Department of Health sent questionnaires to 236 Minnesota industries of different types and sizes. Of these questionnaires, 119 or (51 per cent) were returned from companies that employ 116,459 persons.

The following categories of industry are represented in this survey: Manufacturing (durable and non-durable goods), Mining, Transportation, Public Utilities, Trade, Finance, Insurance, and Service Industries.

Results of the Survey

Question 1.—Total number of employes in your company at the present time?

TABLE I.

Size of Company	Questionnaires Returned	Number of Employees
Under 100	16	894
100-199	28	4,043
200-299	15	3,710
300-499	19	7,409
500-999	16	10,130
1,000-1,999	14	18,599
2,000-4,999	7	19,458
5,000-9,999	2	16,716
Over 10,000	2	35,500
Totals	119	116,459

Question 2.—Number of employes with heart disease known to the company at the present time?

TABLE II.

Size of Company	Questionnaires Returned	Number of Employees	Number of Employees With Known Heart Disease*	Per Cent of Employees With Known Heart Disease
Under 100	16	894	9	1.0%
100-199	28	4,043	38	.9%
200-299	15	3,710	49	1.5%
300-499	18	6,934	124	1.8%
500-999	16	9,607	135	1.3%
1,000-1,999	12	17,299	258	1.5%
2,000-4,999	6	15,918	695	4.4%
Over 5,000	2	19,800	415	2.1%
Totals	113	78,205	1,723	2.2%

*It must be remembered that the above figures refer only to clinically apparent heart disease known to the companies. The actual prevalence of heart disease is undoubtedly much higher than 2.2 per cent.

Questions 3 and 4.—How many employes had heart attacks on the job in 1957; how many off the job in 1957?

In a sample of 76,930 employes, four out of five heart attacks occurred off the job. The incidence of heart attacks in this population occurring on and off the job was approximately the same. This is based on the assumption that the employes averaged forty hours on the job per week.

TABLE III.

Number of companies reporting	112
Number of employees represented	76,930
Total number of heart attacks in 1957	402
Number of heart attacks occurring off the job in 1957	316 (80%)
Number of heart attacks occurring on the job in 1957	86 (20%)

Question 5.—To your knowledge, how many heart attacks which occurred on the job in 1957 were fatal?

Question 6.—How many employes who had heart attacks on the job in 1957: (a) applied for compensation? (b) received compensation?

Eighty-six heart attacks occurred on the job in a sample of 76,930 employes. Only ten (11.6 per cent) Workmen's Compensation cases were filed and as of February, 1958, only five claims were awarded compensation.

TABLE IV.
(Employees Represented 76,930)

Number of Heart Attacks on the Job in 1957?		Number of Workmen's Compensation Cases Resulting from Heart Attacks on the Job in 1957?		Number of Workmen's Compensation Cases Awarded for Heart Attacks on the Job in 1957?	
Total	Fatal Cases	Number	Percentage	Number	Percentage
86	20	10	11.6%	5	50% of cases filed*

*Some cases may still be pending.

Question 7.—How many employes who had heart attacks on or off the job in 1957 returned to work?

At least 65 per cent of the employes who recovered from a heart attack have returned to their former place of employment. If there were a significant number of these cases which were fatal but not reported as such, the percentage of survivors returning to work would be greater.

TABLE V.
(Employees Represented 76,930)

Heart Attacks On and Off the Job in 1957 Minus* Known Fatalities	Number of Employees That Have Returned to Work After Having a Heart Attack?	Percentage of Employees That Returned to Work After Recovering From a Heart Attack?
370	242	At least 65%

*We did not ask for fatalities due to heart attacks occurring off the job. However, many companies included these fatalities in answering the questionnaire.

Question 8.—How much time was lost (in weeks) due to heart disease in 1957?

In 1957, 4,127 weeks were lost because of heart disease in a sample of 68,514 employes.

TABLE VI.

Companies Reporting	No. of Employees (At Present)	Employees With Known Heart Disease (At Present)	Time Lost Due to Heart Disease (1957)
97	68,514	1,610	4,127 weeks

In 1957, 4,127 weeks were lost because of heart disease in a sample of 68,514 employees.

Question 9.—What provisions are made for returning employes to the job after recovering from a heart attack or stroke?

(a) Selective placement to fit physical ability
(b) Employe given suitable job if available
(c) Employe usually returns to old job after recovery
(d) Employe must seek employment elsewhere after a heart attack
(e) Other, please specify

Nearly 50 per cent of the companies represented either selectively place the returning cardiac employe or return him to his former job. Only 2.6 per cent of companies surveyed state the employe would have to seek employment elsewhere. Checking of provisions a and c varied with size of company. The larger companies (over 500) used these provisions 65 per cent of the time, and smaller companies (under 500), 47 per cent of the time.

TABLE VII.
(Employees represented 110,000)

Provision(s)	Number of Companies Usiag Provision	Per Cent of Companies Using Provision	Company Size					
			Under 100	100-299	300-499	500-999	1,000-5,999	Over 5,000
a	22	19%	3	6	4	3	5	1
b	18	16%	2	8	5	2	1	0
c	30	26%	3	12	4	5	5	1
d	3	2.6%	1	1	1	0	0	0
e	9	7.8%	3	5	1	0	0	0
ab	11	9.6%	1	4	1	3	1	1
ac	9	7.8%	0	1	1	3	3	1
bc	6	5.2%	1	1	1	0	3	0
abc	5	4.2%	0	1	1	2	1	0
abcd	2	1.8%	1	1	0	0	0	0
Totals	115		15	40	19	18	19	4

Question 10.—What is the policy of the company toward hiring a person who is known or found to have heart disease when he seeks employment?

(a) Regularly hired
(b) Occasionally hired
(c) Seldom hired
(d) Never hired
(e) Other, please specify

Nearly 60 per cent of the companies represented seldom or never hire persons with known heart disease. The smaller companies, under 500 employes, were somewhat more reluctant to hire persons with known heart disease than companies of over 500 employes.

TABLE VIII.

Size of Company	Number of Companies Reporting	Policy Checked in Question X				
		A	B	C	D	E
Under 100	15	1	3	2	7	2
100-199	28	0	2	5	10	11*
200-299	14	1	1	6	4	2
300-499	19	0	4	6	4	2
500-999	15	1	4	4	5	1
1,000-1,999	13	0	4	4	3	2
2,000-4,999	6	1	2	1	1	1
5,000-9,999	2	0	0	2	0	0
Over 10,000	2	0	0	1	1	0
Totals	114	4	20	31	37	22
Percentage of reporting companies using each policy		A 3.3%	B 17.7%	C 27%	D 32%	E 20%

*The majority of these companies have not had a person with known heart disease seek employment with them.

Question 11.—In your opinion, which of the following are important causes of reluctance toward hiring employes with known heart disease?

(a) Lack of a suitable job
(b) Low productivity of employe with heart disease
(c) Absenteeism of employes with heart disease
(d) Physical demand of job is greater than physical ability of employe with heart disease
(e) Employes with heart disease are unsafe workers
(f) Workmen's Compensation liability
(g) Company sponsored sickness and accident insurance or sick leave liability
(h) Other, please specify

The two greatest causes for reluctance toward hiring persons with heart disease are (1) physical demands of the job are greater than the physical ability of an employe with heart disease and (2) lack of suitable job. Workmen's Compensation liability and group insurance and/or sick leave liability ranked third and fourth respectively.

TABLE IX.
(Employees Represented 100,000)

Causes of Reluctance Toward Hiring Cardiacs (By Order of Significance)							
D	A	F	G	C	B	E	H
1	2	3	4	5	6	7	8

Question 12.—Why, in general, do you believe your first choice in Question 11 is the greatest cause for reluctance toward hiring persons with known heart disease?

TABLE X.

Size of Company	Number of Companies	The Greatest Causes of Reluctance Toward Hiring Persons with Heart Disease, By Order of Significance and Company Size
0-199	35	1. It is felt that the type of work available would exceed the physical and emotional capabilities of a person with heart disease. 2. Past experience with or the fear of incurring expense in terms of Workmen's Compensation and Group insurance claims. 3. No means of evaluating what a person with heart disease can safely do in relation to available jobs. 4. The time and cost of training is too excessive to take a chance on hiring a person with heart disease. 5. The "Labor pool" and seniority rule necessitate a policy of beginning new employees on the harder jobs.
200-299	9	1. It is felt that the type of work available would exceed the physical and emotional capabilities of a person with heart disease. 2. Fear of Workmen's Compensation risk, because Industrial Commission will favor employee. 3. People, in general, do not know enough about heart disease and the capabilities of a person with heart disease. 4. Because of the seniority rule, new employees must begin in active jobs requiring high physical demands.
300-499	16	1. It is felt that the type of work available would exceed the physical and emotional capabilities of a person with heart disease. 2. Risk of incurring expense through Workmen's Compensation and Group insurance claims, particularly Group life insurance. 3. Because of the seniority rule, new hires must begin on more difficult jobs. 4. High number of handicapped people already in industry reduce flexibility of operation.
500-999	14	1. Liberal Group insurance, Workmen's Compensation, and sick leave benefits are becoming quite costly to industry. 2. Absenteeism would be too great. 3. Fear employee would not justify employment investment. 4. It is felt that the type of work available would exceed the physical and emotional capabilities of a person with heart disease.
1,000-4,999	16	1. Risk of incurring expense through Workmen's Compensation and Group insurance. Liability for a cause of death beyond the employer's control. 2. It is felt the type of work available would exceed the capabilities of a person with heart disease. 3. Lack of job placement or means of properly evaluating what a person with heart disease can do. 4. Because of the seniority rule, new hires must begin on more difficult jobs.
Over 5,000	3	1. Risk of incurring expense through Workmen's Compensation and particularly Group life insurance become quite the problems. 2. New employees must begin on harder jobs.

Question 13.—How much was paid out in 1957 of disability or death due to heart disease which occurred in your employes?

(a) In Workmen's Compensation claims?

(b) In sick leave or group insurance claims?

If $15,000 is allowed for Workmen's Compensation claims paid for CVD and for cases still pending, it is found that group insurance claims and sick leave benefits for CVD exceeded Workmen's Compensation by 36 times. Group insurance and sick leave claims for approximately one sixteenth of the total non-agricultural work force in Minnesota exceeded the total Workmen's Compensation claims paid for cardiovascular disease in a one-year period (1956-1957) by 3 times.

TABLE XI.

Size of Company	Number of Companies Reporting	Total No. of Employees	Employees With Known Heart Diseases	A	B
				Workmen's Comp. Claims*	Group Insurance and Sick Leave
Under 100	12	673	7	0	0
100-199	23	3,378	32	0	$ 40,080.81
200-299	13	3,249	43	0	17,630.73
300-499	16	6,085	119	0	52,813.37
500-999	13	8,163	111	$4,515.00	52,813.37
1,000-1,999	11	14,051	156	0	91,387.09
2,000-4,999	3	8,227	620	0	202,263.47
Over 5,000	2	19,800	415	0	88,000.00
Totals	93	63,626	1,503	$4,515.00	$544,988.84

*A few Workmen's Compensation cases are still pending final action. However, the total Workmen's Compensation awarded will probably not exceed $15,000 in a sample of this size.

The survey of "Cardiovascular Disease in Industry" brings out several factors which must be considered in developing a program on rehabilitation of heart and chest patients. First, and foremost, is the problem of Workmen's Compensation liability. It appears that something is lacking in our present Workmen's Compensation laws in relation to non-occupational diseases. How can non-occupational, particularly degenerative diseases, be judged by laws designed for occupational disabilities?

It is reasonable to infer that an injury is job-associated when a man has a finger amputated in a machine he is operating. The accident occurs very quickly, and we can assume that chances are the same injury would not have occurred if the employe had been somewhere else. In similar fashion, a heart attack can occur just as quickly and dramatically on the job. But, here the comparison between the amputated finger and the heart attack ends. In many instances, one cannot say that the heart attack would not have occurred if the employe had been somewhere else. We are now dealing with two entirely different situations. The myocardial infarction, in most instances, is the end result of pre-existing disease of months' or years' duration. In contrast, the finger amputation is the end result of a sudden accident.

The survey showed eighty-six heart attacks occurred on the job and 316 occurred away from work. With correction for time spent on and off the job, heart attacks were found to occur at a slightly greater frequency away from work. The difference, however, is not statistically significant.

I do not wish to imply that a man's occupation has no effect on his cardiovascular system. I am implying that we cannot judge the association between job and heart attack under present Workmen's Compensation laws which were designed for something else. Until such a time occurs when laws are devised to cope with chronic degenerative diseases, the fear of the economic risk to the employers will be a major cause of reluctance toward hiring a person with heart disease.

In analyzing the reasons listed for not hiring persons with heart disease, one gets the impression that the economic loss through Workmen's Compensation claims is quite great. However, the actual figures do not bear this out. Only ten Workmen's Compensation cases resulted from eighty-six heart attacks occurring on the job, and only five received compensation payment in a sample of 76,930 employes. This certainly makes one wonder whether the impression is justified. I also wonder whether many companies actually believe this is a major cause of reluctance toward hiring cardiac persons.

On the other hand, the fear of incurring group insurance and sick leave claims seems more warranted. Assuming $15,000 will be paid out for Workmen's Compensation claims in our sample of employes, payments for sick leave and group insurance benefits will exceed this amount by thirty-six times. Maybe the added fringe benefits are partly responsible for the low number of Workmen's Compensation cases resulting from heart disease.

A relatively high percentage (65 per cent) of workers were found to return to their former place of employment after recovering from a heart attack. Almost one half of these employes returned to their former job. In many instances, an employe, who has recovered from a heart attack, has a much better chance of returning to his former place of employment than a person with heart disease who seeks new employment in the same company. Almost 60 per cent of the companies surveyed never or seldom hire a person with heart disease.

The survey also shows that two of industry's major causes of reluctance toward hiring a person with heart disease are: (1) the physical demands of the job are greater than the physical ability of the employe with heart disease, and (2) lack of a suitable job. These two causes are directly related. It is often difficult for companies to put employes with heart disease into special jobs for several reasons. It is even harder for companies to determine just what are the physical and emotional capabilities of a cardiac worker in relation to available jobs. The prospective worker is then viewed as a risk to the company in terms of Workmen's Compensation, company-sponsored insurance and sick leave plans, and time and expense of training.

This brings out the need for a method of evaluating, as objectively as possible, the physical and emotional abilities of a worker with heart disease. It is also necessary, at the same time, to ascertain what type and how much work this employe can do without jeopardizing himself or his employer. Such a means of evaluation, in combination with revised Workmen's Compensation laws, would be a major step in putting persons back to work and in reducing the fear of economic risk involved in hiring a person with heart disease.

Other obstacles brought out in the survey toward hiring and placing handicapped persons are: The "labor pool" and/or seniority rights. Some companies stated they have little control over placement of a new employe after he is hired. New employes often must begin on the more active and physically difficult jobs. For this reason, companies believe the risk of hiring a person with heart disease is too great.

Seniority rights also influence placement of persons returning to work after recovering from a heart attack in many industries. If the worker cannot return to his old job, he may have trouble

being placed because of insufficient longevity with the company. This is particularly true in smaller industries which do not have a variety of suitable jobs available.

The fear of incurring Workmen's Compensation and group insurance claims is believed to be one of the major causes of reluctance toward hiring persons with cardiovascular disease. The Minnesota Department of Health, with the cooperation of several insurance companies and the Minnesota Industrial Commission, has been able to gather factual data on this subject.

A. *Group Sickness and Accident Insurance*

An analysis of 718 consecutive group sickness and accident claims for cardiovascular disease in Minnesota (1956) is given in Table A.

In 485 of the 718 claims, the occupation or dependency status of the claimee was known. Approximately 33 per cent of the claims were due to cardiovascular disease occurring in dependents. The greatest number of dependent's claims were filed as a result of varicosities, thrombophlebitis, rheumatic fever, and congenital heart disease.

Several thousand group sickness and accident claims were analyzed in this study and it was found that cardiovascular disease accounts for about 5 to 10 per cent of all group sickness and accident claims.

B. *Group Life Insurance* (Analysis of 393 Group life claims)

While cardiovascular disease made up only 5-10 per cent of Group sickness and accident claims, it accounted for 45 per cent of Group life claims in this study. 70 per cent of the deaths due to cardiovascular disease were due to arteriosclerotic heart disease, primarily myocardial infarction.

C. *Workmen's Compensation*

All Workmen's Compensation claims which were awarded for cardiovascular disease in the State of Minnesota were reviewed for a two-year period, June, 1955 to June 1957. The results of this review are given in Table B.

During a one-year period (June, 1955 to June,

TABLE A

Type of Cardiovascular Disease	No. of Claims	Average Cost Per Claim	Per Cent of Total Claims for CVD	Per Cent of Total Amount Paid in CVD Claims
Arteriosclerotic heart disease (50% myocardial infarction)	241	$591.00	33.5%	47.5%
Varicosities	141	220.00	19.6%	10.2%
Heart failure and heart disease (type?)	65	334.00	9.0%	7.2%
Thrombophlebitis	62	286.00	8.6%	5.9%
Hypertension	60	250.00	8.3%	4.3%
Cerebral vascular disease (strokes)	52	812.00	7.2%	14.5%
Arrhythmias	45	253.00	6.2%	3.8%
Rheumatic fever and rheumatic heart disease	30	365.00	4.6%	3.7%
Congenital heart disease	19	448.00	2.6%	2.8%
Pericarditis	3	174.00	.4%	.1%
Total	718		100.0%	100.0%

TABLE B

Compensation Cases Arising from Cardiovascular Disability or Death. Cases Closed During Two-Year Period 6/55-6/57 in State of Minnesota

Type of Case	Number	Compensation Paid	Medical and Hospital	Funeral
Permanent total disability	2			
Compromised	2	$ 11,066.00	$ 1,219.00	—
Fatal	61	258,405.00	9,250.00	$27,690.00
Not disputed	5	45,000.00	—	1,250.00
Compromised	56	213,405.00	9,250.00	26,440.00
Temporary, exceeding one week disability	52	42,965.00	22,786.00	—
Not disputed	8	2,393.00	1,329.00	—
Compromised	44	40,572.00	21,457.00	—
Totals	115	$312,436.00	$33,255.00	$27,690.00
Grand totals—6/55-6/57—$373,381.00				

TABLE C

Cardiovascular Disease Diagnosis: Physically Impaired Employees Registered in Compliance With the Second Injury Clause

Type of Cardiovascular Disease (CVD)	No. Cases	Percentage of Disability
Hypertension and hypertensive heart disease	467	42.0%
Arteriosclerotic heart disease		
Coronary disease	38	
Angina pectoris	22	20.0%
Coronary insufficiency	34	
Myocardial infarction	124	
Heart disease (type unspecified)	164	15.0%
Varicosities	90	8.0%
Rheumatic fever and rheumatic heart disease	52	4.7%
Cerebral vascular disease (strokes)	34	3.0%
Thrombophlebitis	15	1.3%
Heart failure (cause unknown)	15	1.3%
Heart murmurs	14	1.3%
Generalized arteriosclerosis	10	.9%
Valvular heart disease (type unspecified)	10	.9%
Arrhythmias	8	.8%
Myocarditis	6	.6%
Congenital heart disease	2	.2%
Total cardiovascular disabilities	1105	100.0%
Total disabilities, all types	4057	

1956), diseases of the heart and circulation made up 0.22 per cent of the total Workmen's Compensation claims awarded, and these diseases accounted for 1.1 per cent of the amount paid in Workmen's Compensation claims.

In compliance with the second injury clause of Workmen's Compensation laws, adopted in 1957, physically impaired employes are registered with the Minnesota Industrial Commission. Approximately 4,000 consecutive disability registrations were studied to find how many of these disabilities were the result of cardiovascular disease. Table C includes a breakdown of the various types of cardiovascular disease.

Cardiovascular disease accounted for 27 per cent of the 4,057 registered disabilities.

Acknowledgments

I wish to thank the following persons and organizations for their assistance and co-operation in making the "Survey of Cardiovascular Disease in Industry" possible.

1. Miss Heide Henriksen, Industrial Nursing Consultant, Minnesota Department of Health.
2. Dean Fleming, M.D., Director, Division of Disease Prevention and Control, Minnesota Department of Health.
3. Arthur C. Kerkhof, M.D., Minneapolis, Minnesota.
4. Philip R. Lee, M.D., Palo Alto Medical Clinic, Palo Alto, California.
5. Mr. Robert Faricy and staff, Minnesota Department of Labor and Industry.
6. Mr. Robert Hohman, Executive Secretary, and Mr. Eivind Hoff, Minnesota Heart Association.
7. Norvin C. Kiefer, M.D., Chief Medical Director and Mr. Richard H. Hoffman, Assistant Actuary, The Equitable Life Assurance Society of the U.S.
8. Mr. Walker S. Richarson, Liberty Mutual Insurance Company.
9. Mr. L. M. Couch, Supervisor, Group Claims Division, Bankers Life Company.
10. Mr. Will Brown and Mr. Kenneth Lipp, Supervisors, Group Claims Division, Aetna Life Insurance Company.
11. Minnesota Industries participating in the Survey.
12. The Heart and Tuberculosis Rehabilitation subcommittee of the Minnesota State Medical Association.

Woman's Auxiliary

AUXILIARY ACTIVITIES FOR AMA MEETING LISTED

The Interim Clinical meeting of the AMA will be held December 2, 3, and 4, in Minneapolis. Mrs. Karl W. Anderson, Minneapolis, is general chairman of arrangements for the auxiliary activities in connection with this event.

A hospitality and registration table near the Mayfair room in the lobby of the Leamington Hotel will be available for all visiting wives.

The following events have been arranged:

Tuesday, December 2, 2:00 to 4:00 p.m., a tea will be held at the American Swedish Art Institute with Mrs. Richard Lindquist in charge.

On Wednesday, December 3, at 9:30 a.m., there will be a brunch in the Minnesota room at Donaldson's, Southdale. Chairman of arrangements is Mrs. O. L. Norman Nelson.

A luncheon on Thursday, December 4, at 12 noon, has been planned by Mrs. John S. Milton. Following this luncheon, Mrs. L. R. Boies has arranged a tour of the Betty Crocker Kitchens at General Mills.

Mrs. Underwood, national auxiliary president, and Mrs. Gunnar Gunderson, wife of the president of the AMA, will be our guests on Tuesday and Wednesday.

"SAISON DE COLOUR" IS OUTSTANDING SUCCESS

Mrs. Rodney F. Sturley, President of the Ramsey County Medical Auxiliary, welcomed a sellout audience to the luncheon-fashion show September 17, at the St. Paul Hotel.

Beautiful fashions were presented by Field-Schlick's and modeled by members of the Auxiliary and professional models. Decorations and fall centerpieces were in keeping with the theme "Saison de Colour."

Mrs. Walter A. Carley was general chairman for a very successful and well-received show.

The fashion show is an annual event sponsored by the Ramsey County Medical Auxiliary for the benefit of the Philanthropic Fund. It is the only fund-raising project of the year. Funds raised are used for the American Medical Education Foundation, campships for local under-privileged children and medical scholarships at the University of Minnesota.

RENVILLE-REDWOOD COUNTY NOTES

Auxiliary members attending the School of Instruction at the Biltmore Motel in Minneapolis from Renville-Redwood County were Mrs. S. F. Ceplecha, Redwood Falls; Mrs. Robert Pierce, Renville; Mrs. Donald Metz, Buffalo Lake; Mrs. Wm. Diessner, Redwood Falls, and Mrs. J. A. Cosgriff, Olivia.

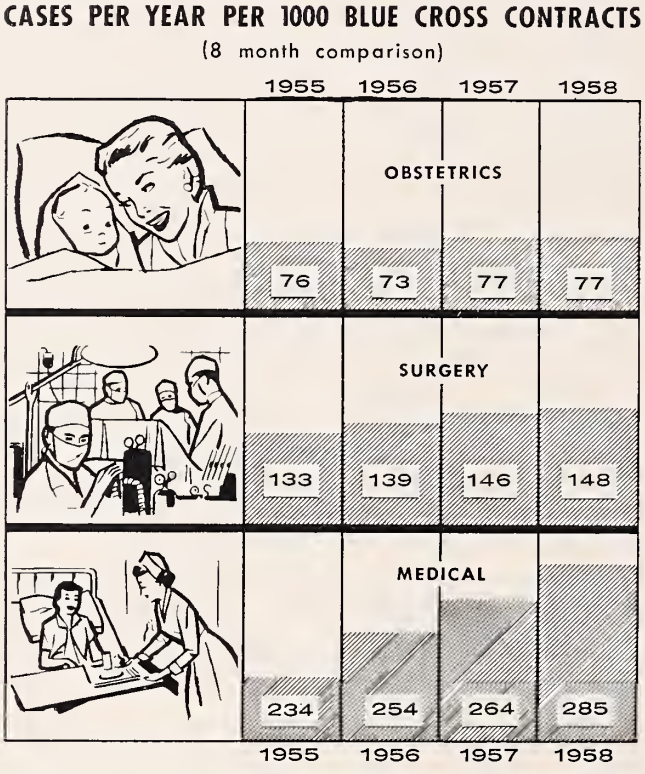
The Blue Shield report for the first eight months of 1958 shows that participant subscribers used their contracts far more often than during the same period of 1957, or any previous year. Increases are apparent in every category of service for which allowances are provided by the Blue Shield contract.

The number of strictly medical services for which Blue Shield provided allowances the first eight months of this year exceeded by more than 13 per cent the number of such services provided allowances during the same eight months of last year. The number of surgical services increased 12 per cent while the number of obstetrical services increased only 4 per cent. However, the number of all other types of services combined, which includes diagnostic x-ray, anesthesia, endoscopy, consultation and x-ray and electroshock therapy, increased 32 per cent. Considering all services, Blue Shield made allowances during the first eight months of 1958 for approximately 17 per cent more services than the same eight months in 1957.

To illustrate better the increased use of the contract by participant subscribers, it should be noted that, between September 1, 1957, and August 31, 1958, the number of participant subscribers increased 21,100, or approximately 2 per cent. It is readily apparent that an increase of 2 per cent in enrollment inadequately accounts for the much greater increased use of the contract shown above.

Blue Cross payments to hospitals during the first eight months of 1958 totaled $22,315,898. This amount provided 888,981.6 days of hospital care to 144,961 participant subscribers.

The frequency of subscriber usage of Blue Cross benefits continues at the record breaking level experienced since the last quarter of 1957. The number of cases paid to date this year represents 510 cases per year per 1,000 contracts, or more than one out of every two Blue Cross contracts in effect have incurred benefits. This represents a 4.7 per cent increase over the Blue Cross experience during the same period of the previous year.



The chart above shows the reasons for increases in incidence based on a four-year comparison of the first eight months of each year.

In addition to increased usage of benefits, Blue Cross subscribers hospitalized are staying 0.1 of a day longer than last year at this time. The overall average hospital stay this year is 6.1 days per case compared to 6.0 days experienced during the same period of the previous year. As a result of increased usage and longer average hospital stay per case, the 3,128 Blue Cross days paid per year per 1,000 contracts during the first eight months of 1958 is 6.7 per cent higher than our experience of the previous year.

Year to date averages of the number of days paid per year per 1,000 contracts indicate increases as shown in the accompanying chart.



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*A Symposium on the Pharmacologic Effects of Dartal on the Liver, Chicago, Searle Research Laboratories, Feb. 7, 1958.

Meetings and Announcements

NATIONAL

AMERICAN MEDICAL ASSOCIATION, 12th clinical meeting, Minneapolis, December 2-5, 1958

American College of Surgeons sectional meetings:

Charleston, South Carolina, January 19, 20, 21, 1959

Houston, Texas, February 2, 3, 4, 1959

Vancouver, British Columbia, February 26, 27, 28, 1959

St. Louis, Missouri (four-day meeting; joint Nurses' Sessions), March 9-12, 1959

Montreal, Quebec (four-day meeting; joint Nurses' Sessions), April 6-9, 1959

Mediclinics, fourth annual refresher course of postgraduate medical education, Fort Lauderdale, Florida, March 2-12, 1959. (Acceptable for 32 hours of postgraduate study—Category I credit for American Academy of General Practice members).

INTERNATIONAL

International College of Surgeons, southeastern regional meeting, Miami Beach, January 4-7, 1959. For information, write to Harold O. Hallstrand, M.D., 7210 Red Road, South Miami, Fla., chairman.

AMA CLINICAL MEETING IN MINNEAPOLIS TO DRAW 3,000 PHYSICIANS

More than 3,000 physicians are expected to attend the American Medical Association's twelfth clinical meeting December 2-5, in Minneapolis.

Designed to help the family physician solve his daily practice problems, the meeting has been planned in co-operation with the Minnesota State Medical Association and the Hennepin County Medical Society. General chairman of the meeting is Dr. O. L. Norman Nelson, Minneapolis, president of the Hennepin County Medical Society. Dr. N. L. Gault, Jr., Minneapolis, is the scientific program chairman.

This is the fifth time the American Medical Association has met in the Twin Cities, although it is the first clinical session. Annual meetings were held in Minneapolis in 1913 and 1928 and in St. Paul in 1882 and 1901.

The scientific portion of the program will be held in Minneapolis Auditorium, while the House of Delegates, the American Medical Association policy-making body, will meet at the Leamington Hotel, headquarters for the meeting.

In the Minneapolis Auditorium will be 100 scientific exhibits prepared by physicians and the American Medical Association Council on Scientific Assembly. Among them will be exhibits on medical history in Minnesota, including information about Indian medicine and the Mayo Clinic.

There will also be approximately 130 technical exhibits presented by pharmaceutical houses, medical equipment manufacturers, food processors, medical book publishers and other commercial organizations.

Approximately 200 physicians will participate in lecture meetings, symposiums and panel discussions on such subjects as neurology and psychiatry, cardiovascular disease, arthritis, orthopedics and various other medical topics.

Approximately thirty-five medical motion pictures will be shown in Minneapolis Auditorium. A special feature will be a symposium on proctology Wednesday evening, December 3. Moderated by Dr. Raymond Jackman, Mayo Clinic, it will include three films made by Dr. Jackman; Dr. Malcolm Hill, Los Angeles, and Dr. Lawrence Abel, London, England.

Another special feature of the meeting will be a trans-Atlantic conference between AMA members in Minnapolis and British Medical Association members in Southampton, England. It is scheduled for Friday, December 5. The British Association will be holding a clinical session at that time.

Closed circuit colored television again will be shown to doctors attending the meeting. It will be sponsored by Smith, Kline and French Laboratories, Philadelphia pharmaceutical house. Programs originating in the Mayo Memorial Building of the University of Minnesota Hospital will be shown in Minneapolis Auditorium. Among the topics will be cardiac by-pass, neurology, orthopedic problems of the extremities, and caesarian section.

The General Practitioner of the Year will be named Tuesday morning at the opening session of the House of Delegates. Dr. Cecil W. Clark, Cameron, Louisiana, was the last recipient of the award, given annually to an outstanding American doctor for his medical and civic contributions to his community.

Entertainment highlights of the meeting will include a jazz concert and a concert by the Apollo Club, the well known Minneapolis chorus.

An outline of the history of Dixieland jazz and a concert will be given Tuesday evening at the Leamington Hotel by Doc Evans and his Dixieland band of Minneapolis.

The Apollo Club concert, sponsored by Minnesota Blue Shield, will be presented Thursday evening at the Leamington.

The House of Delegates members and their wives will hold a banquet Wednesday evening. The entertainment, centering around the theme, "A Night in Vienna," will be sponsored by the Minnesota State Pharmaceutical Association.

The Women's Auxiliary to the AMA, which will hold no regular meetings, will sponsor a series of tours for physicians' wives during the meeting.

(Continued on Page A-52)



next stop in our schedule

SKF's MEDICAL COLOR TELEVISION goes next to the meeting of the American Medical Association in Minneapolis—December 2-5.

We hope to give our physician-guests who visit with MEDICAL COLOR TELEVISION something to take home with them . . . something they will find useful in their practices.

The intent of these programs is to introduce the new in diagnosis and technique, to review the proven—and to integrate the two.

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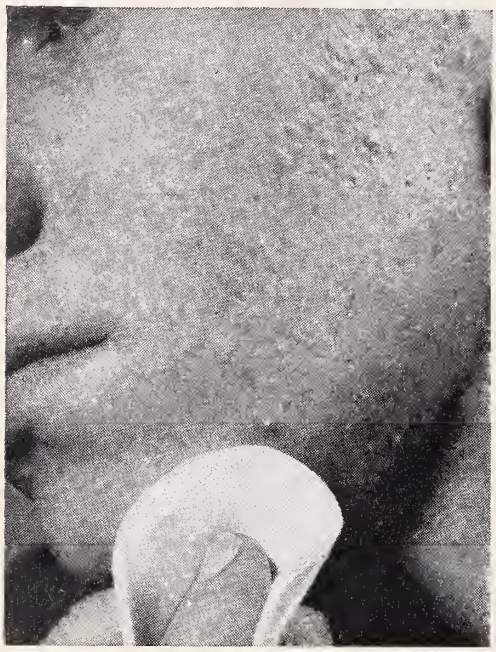
Chicago Medical Society * March 4-6 * Chicago (completed)
Michigan Clinical Institute * March 19-21 * Detroit (completed)
American College of Physicians * April 28-May 2 * Atlantic City (completed)
Canadian Medical Association * June 16-18 * Halifax (completed)
American Medical Association * June 23-26 * San Francisco (completed)
Kansas City Southwest Clin. Conf. * Sept. 23-25 * Kansas City, Mo. (completed)
Kentucky State Medical Association * September 23-25 * Louisville (completed)
American College of Surgeons * October 6-10 * Chicago (completed)
Southern Medical Association * November 3-6 * New Orleans (completed)



American Medical Association * December 2-5 * Minneapolis

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(Continued from Page A-50)

PUBLIC HEARING REGARDING REGULATIONS RELATING TO IONIZING RADIATION

Whereas, ionizing radiation can be instrumental in the improvement of health, welfare and productivity of the public if properly utilized, and may impair the health of the people and the industrial and agricultural potentials of the State if improperly utilized, and the Board of Health has the statutory authority and duty to adopt, alter and enforce regulations for the preservation of the public health and thereby to control sources of ionizing radiation, and the handling, storage, transportation, use and disposal of radioactive isotopes and fissionable materials within this State, and to observe their effect upon human health, it is thereby declared to be the purpose of the State Board of Health to secure information concerning the nature and extent of the employment of radiation emitting equipment and radioactive materials within this State, and to control or prevent dangers to health from ionizing radiation without limiting or interfering with the constructive uses of radiation by the adoption of regulations relating to these matters.

Notice is hereby given that a public hearing of this matter will be held at 10:00 a.m., on November 21, 1958, in the Auditorium of the State Office Building in St. Paul, Minnesota.

Copies of the proposed Regulations are available from the Section of Radiation and Occupational Health, Minnesota Department of Health, University Campus, Minneapolis 14, Minnesota.

MENTAL HEALTH GRANTS OFFERED

The National Institute of Mental Health is offering grant support for a training program for general practitioners and other physicians engaged in the practice of medicine other than psychiatry. Funds are available during the current year (fiscal year 1959) for these grants, and training institutions may submit applications at any time.

The program has two purposes:

1. To foster the development of postgraduate training in psychiatry for the practitioners who wish to increase their psychiatric knowledge and skills in order to be able to deal more effectively with the emotional aspects of illness generally and in order to play a more effective role in the treatment and prevention of mental illness.

Grant support is being offered to medical schools, hospitals, clinics, and medical and psychiatric societies for the development and expansion of such postgraduate training in the form of courses, institutes, and seminars. This support does not include fees, subsistence, or travel for the physicians who attend.

Physicians interested in obtaining this type of training should apply to medical schools, hospitals, clinics, and medical or psychiatric societies which have, or are developing, such training opportunities.

2. To provide support at an adequate level for psychiatric residency training for physicians in practice

(Continued on Page A-56)



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(Continued from Page A-52)

who wish to become psychiatrists. Training stipends up to a maximum of $12,000 a year are available.

Inquiries about the program should be sent to Dr. Seymour D. Vestermark, Chief, Training Branch, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland.

RESEARCH GRANTS FOR STUDIES ON ARTHRITIS AND RHEUMATISM

The Minnesota Chapter of the Arthritis and Rheumatism Foundation announced today the availability of grants totaling $16,000 for the study of the cause and cure of arthritis and rheumatism.

The grants will be made from the money raised in the annual fund drive conducted last June.

The Medical and Scientific Committee of the Arthritis and Rheumatism Foundation, will make the grants. Dr. Robert A. Good, Research Professor of Pediatrics in the Univeristy of Minnesota, is chairman of the Medical and Scientific Committee.

Application forms for the grants, which are limited to the State of Minnesota, are available at the chapter offices, 89 South 10th Street, Minneapolis. Deadline for applications is January 1.

CONTINUATION COURSES

The University of Minnesota announces a continuation course in **Fractures for General Physicians** which will be held at the Center for Continuation Study from November 17 to 19, 1958. Treatment of fractures most commonly seen will be stressed. Guest speakers will include Doctors George J. Garceau, Professor of Orthopedic Surgery and Head of Orthopedic Department, Indiana University School of Medicine, Indianapolis, and Fred C. Reynolds, Assistant Professor of Clinical Orthopedic Surgery, Washington University School of Medicine, St. Louis, Missouri. The course will be presented under the direction of Dr. John H. Moe, Director, Division of Orthopedic Surgery.

* * *

The University of Minnesota will present a continuation course in **Neurology for General Physicians** at the Center for Continuation Study on the University Campus on November 17 to 22, 1958. Emphasis will be given to common neurological problems seen in general practice including a review of basic neuroanatomy and methods of neurological diagnosis.

Faculty for the course will include Doctors Gilbert H. Glaser, Associate Professor and Chief, Section of Neurology, Yale University School of Medicine, New Haven, Connecticut; Charles A. Kane, Professor of Neurology, Boston University School of Medicine, Boston, Massachusetts; and Donald D. Matson, Associate Clinical Professor of Surgery, Harvard University Medical School, Boston, Massachusetts.

The course will be presented under the direction of Dr. A. B. Baker, Professor and Director of Neurology, and Dr. William T. Peyton, Professor and Director of Neurosurgery. The remainder of the faculty will in-

clude members of the faculty of the University of Minnesota Medical School and the Mayo Foundation.

MINNESOTA STATE MEDICAL ASSOCIATION CONFERENCE ON AGING

The Committee on Geriatrics and Chronic Illness of the Minnesota State Medical Association will sponsor a Conference on Aging, to be known as the Minnesota State Medical Association Conference on Aging on Friday afternoon, December 5, 1958, beginning at 1:30 p.m. at the Leamington Hotel in Minneapolis. The purpose of this meeting is to disseminate and extend the ideas of the American Medical Association on this matter of aging to all of the physicians of Minnesota. These ideas were recently discussed at a planning conference held in Chicago, September 13 and 14, 1958, and are summarized on pp. 769-771 of the October 11, 1958, issue of "The Journal of the American Medical Association."

An interesting four-hour agenda is planned to attempt to briefly illustrate the stake physicians have in the problem of aging which has been described as "Medicine's No. 1 Problem." The meeting date is the last afternoon of the Clinical Meeting of the American Medical Association and it is hoped that at least one member of each of the constituent county or district medical societies can attend.

The Governor's Conference on Aging will be held at the Lowry Hotel in St. Paul, November 20 and 21, 1958. Physicians interested in the problems of the aging are invited to attend.

AMERICAN RHEUMATISM ASSOCIATION INTERIM SESSION

The interim Scientific Session of the American Rheumatism Association will be held at the Plummer Building of the Mayo Clinic, Rochester, Minnesota, on Saturday the 6th of December, 1958. All interested physicians are cordially invited to attend.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The twenty-second annual meeting of The New Orleans Graduate Medical Assembly will be held March 2, 3, 4, and 5, 1959, with headquarters at the Roosevelt Hotel.

Eighteen outstanding guest speakers will participate and their presentations will be of interest to both specialists and general practitioners. The program will include fifty-four informative discussions on many topics of current medical interest, in addition to clinicopathologic conferences, symposia, medical motion pictures, round-table luncheons and technical exhibits.

Following the meeting in New Orleans, arrangements have been made for a clinical tour to Mexico City, Guernavaca, Taxco, Acapulco and San Jose Purua, leaving from New Orleans on Friday, March 6 and returning on Saturday, March 21.

Details of the New Orleans meeting and the clinical tour are available at the office of the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12, Louisiana.



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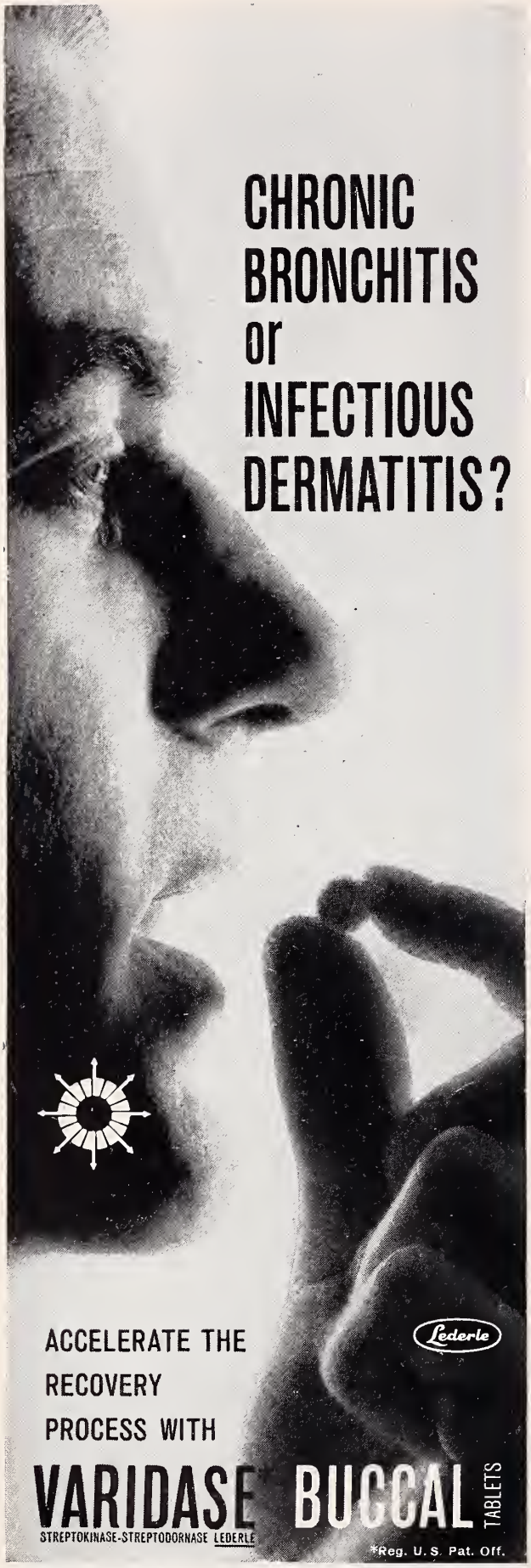
TRISERT TABLETS—Patient set, contains bottle of 30 tablets and special inserter. Bulk battle of 100 tablets.

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INTERPROFESSIONAL MEETING

The Rice County Medical Society was host to the Rice County Dental Society and the Pharmacists of Rice County at a dinner meeting held at the Evergreen Knoll Club in Faribault, Monday, October 20. The total attendance was seventy-five. Dr. J. Gordon Beaton, President of the Rice County Medical Society, presided at the meeting. Problems of mutual concern in protecting the public health were discussed. Guest speakers were Mr. Henry Moen of the State Pharmaceutical Association and Dr. Lester Dale of the Minnesota State Medical Association.

CONTINUATION COURSES—1959

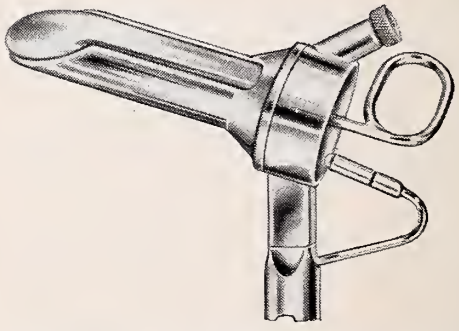
Medical continuation courses to be presented at the Center for Continuation Study, University of Minnesota, early in 1959 are as follows:

January 5-7—Otolaryngology for General Physicians
January 15-17—Newer Drugs in General Practice
January 22-24—Surgery for Surgeons
February 23-25—Cardiovascular Diseases for General Practice
March 2-4—Pediatrics for General Physicians

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

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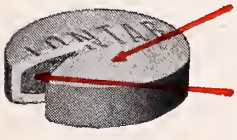
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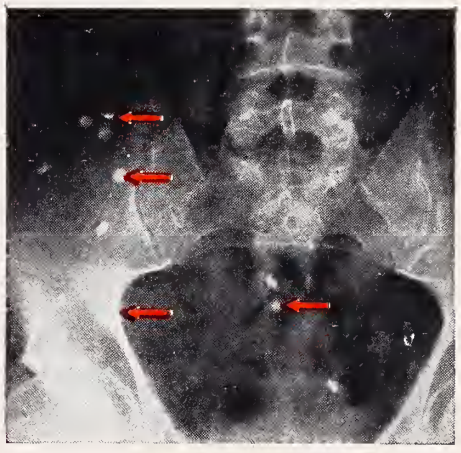
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C I B A SUMMIT, N. J.

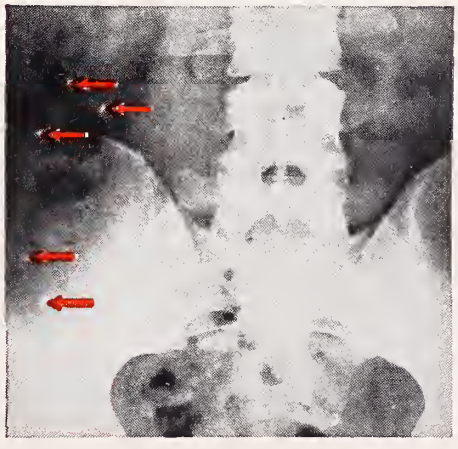
2 hours Lontabs are in the stomach and small bowel. Release of core substance is well under way.



4 hours Lontabs are in the ileum and cecum as core has steadily eroded.



8 hours Lontabs are still visible as substance of core continues to be released.



In Memoriam

SILAS C. ANDERSEN

Dr. Silas C. Andersen, of Minneapolis, died September 28, 1958, at Fairview Hospital. He was sixty-nine years old. His death followed injuries which he sustained in a fall from a ladder while trimming a tree on his property at Deephaven, Lake Minnetonka.

Dr. Andersen graduated from St. Olaf College, Northfield, Minnesota, in 1918 and served a year with the army engineers in France. In 1924, he graduated from the University of Minnesota medical school. He was a staff member at Fairview, St. Andrew's and St. Barnabas Hospitals. He spent his entire professional career in Minneapolis. Dr. Andersen was a board member of Dana College and Santal Mission, a fellow of the American College of Surgeons and a member of the Minnesota State Medical Association, the American Medical Association, Central Lutheran Church and Minneapolis Athletic club.

For the past six years, Dr. Andersen had served as a director of the Hennepin County Medical Society.

In August, 1956, he received the St. Barnabas Hospital Bowl award as physician of the year in Hennepin County.

He was chairman of the society's medical advisory committee to the county welfare board and was a member of the judicial council of the Minnesota State Medical Association.

Dr. Andersen was the son of the founder of Dana College, Blair, Nebraska.

Survivors include his wife, Agnes; a daughter, Mrs. Gwenyth McIntosh, Kampala, British East Africa; a son, Samuel, Minneapolis; a sister, Mrs. Walter Seiler, Glendale, California, and three brothers, Ruthven C., West Point, Nebraska; Anton, Swea City, Iowa; and Dr. Allen E., Amherst, Massachusetts.

NEIL S. DUNGAY

Dr. Neil S. Dungay, teacher and physician, who had been actively associated with the Carleton College faculty longer than any other person in its history, passed away Friday, Sept. 19, 1958, at Northfield Hospital, where he had been a patient for two weeks following a cerebral hemorrhage. He was seventy-five years old at the time of his death.

At the time of his retirement from Northfield's Carleton College, he was the senior professor on the faculty, having served under three of the four presidents of Carleton. He began his services there in 1907, and continued his active association with the college for forty-five years.

At Carleton, Dr. Dungay, for a considerable time, was professor in the department of biology and chairman of the department and subsequently director of the College Health Service. In later years of his long tenure at Carleton, he was professor of hygiene and public health both as chairman of that separately organized department and as a professor in the department of zoology.

A graduate of the University of Minnesota in 1904, he began his long teaching career with two years as science teacher at the Marshall High School. Earlier, he taught in a rural school. In 1913, while teaching at Carleton, he was awarded the Ph.D. degree at the University of Chicago. He was a member of Phi Beta Kappa, national scholarship society, and Sigma Xi, science honor society. He was a fellow of the American Association for the Advancement of Science.

In 1925, Professor Dungay completed the necessary requirements for the M.D. degree at the University of Minnesota. He did his internship at University Hospital, and was a physician in the Student Health Service at the University. He was elected a member of Phi Beta Pi, medical honor society. Dr. Dungay was also a member of the Rice County Medical Society, the Minnesota State Medical Association and the American Medical Association. He was a fellow of the American Public Health Association and a member of other professional groups.

Following the completion of his work for his M.D. degree, Dr. Dungay built and headed the first organized Carleton Student Health Service. He did postgraduate work at the Brooklyn Institute of Arts and Sciences and at the University of Wisconsin. He was a former president of the North Central Section of the American Student Health Association.

In addition, he was a past master of Social Lodge No. 48, A.F.&A.M., a member of other Masonic bodies to which he contributed much, and was honored as grand master of the Minnesota Grand Council of Royal and Select Masters.

A member of the Minnesota National Guard, in which he served as private, sergeant, and second lieutenant, he was also an instructor in the Student Army Training Corps at Fort Sheridan in 1918 during World War I. During World War II, he was in the Medical Procurement and Assignment Service.

Survivors include his wife, Freda; two nephews, Herbert Dungay of Chicago, Illinois, and Robert Dungay of Peterson, Minnesota.

RICHARD F. HERBST

Dr. Richard F. Herbst, a member of the medical staff of the Willmar State Hospital for ten years, died October 5, 1958, at the Rice Hospital. He was fifty years of age.

Dr. Herbst was born at Tripoli, Iowa, and received his preliminary education at the New Richland, Minnesota, high school. He received his professional education at the University of Minnesota School of Medicine.

He was a member of the Kandiyohi-Swift-Meeker

(Continued on Page A-62)

new

Tao*

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(brand of triacetyloleandomycin with gluCOSAmine)

Capsules / Oral Suspension

designed for effective control of common gram-positive infections

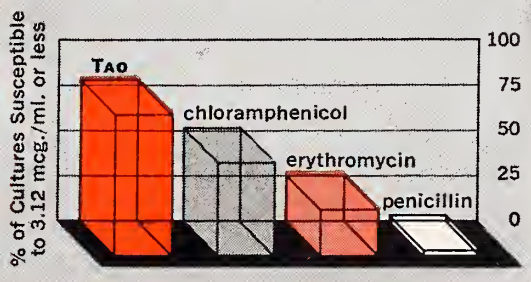
effective . . .

CLINICAL RESULTS	adults	children	all Staph infections
Cured	172 (80%)	148 (89%)	71 (88%)
Improved	28 (13%)	8 (5%)	7 (9%)
Failure	17 (7%)	11 (6%)	3 (3%)

Types of infecting organisms: The majority of identified etiologic microorganisms were Staph. aureus and Staph. albus. Tao has its greatest usefulness against organisms such as: staphylococci (including strains resistant to other antibiotics), streptococci (beta-hemolytic strains, alpha-hemolytic strains and enterococci), pneumococci, gonococci, Hemophilus influenzae.

even against resistant staph[1,2] . . .

Per cent of "antibiotic-resistant" epidemic staphylococci cultures susceptible to Tao, erythromycin, penicillin and chloramphenicol.[1]



well tolerated . . .

REACTIONS:

(a) adults	(b) children
Total—9.2% (20 out of 217)	Total—0.6% (1 out of 167)
Skin rash—1.4% (3 out of 217)	Skin rash—none
Gastrointestinal—7.8% (17 out of 217)	Gastrointestinal—0.6% (1 out of 167)

There was complete freedom from adverse reactions in 94.5% of all patients. Side effects in the other 5.5% were usually mild and seldom required discontinuance of therapy.

plus . . . stability in gastric acid • rapid, high and sustained blood levels • high urinary concentrations • outstanding palatability in a liquid preparation.

Dosage and Administration: Dosage varies according to the severity of the infection. For adults, the average dose is 250 mg. q.i.d.; to 500 mg. q.i.d. in more severe infections. For children 8 months to 8 years of age, a daily dose of approximately 30 mg./Kg. body weight in divided doses has been found effective. Since Tao is therapeutically stable in gastric acid, it may be administered at any time, without regard to meals.

Supplied: Tao Capsules—250 mg. and 125 mg.; bottles of 60. Tao for Oral Suspension—1.5 Gm.; 125 mg. per teaspoonful (5 cc.) when reconstituted; unusually palatable cherry flavor; 2 oz. bottle.

References: 1. English, A. R., and Fink, F. C.: Antibiotics & Chemother. (Aug.) 1958. 2. English, A. R., and McBride, T. J.: Antibiotics & Chemother. (Aug.) 1958. 3. Wennersten, J. R.: Antibiotic Med. & Clin. Therapy (Aug.) 1958. 4. Celmer, W. D., et al.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 476.

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Pearl River, New York

RICHARD F. HERBST

(Continued from Page A-60)

County Medical Society, the Minnesota State Medical Association, and American Medical Association.

Survivors include his wife, Harriet; three daughters—Mary Jean, Jill and Karen; two brothers, and two sisters.

LEON A. WILLIAMS

Dr. Leon A. Williams, of Minneapolis, died October 15, 1958, at Lester Prairie, Minnesota. He was eighty-six years old.

A member of the Fifty-Year Club of the Minnesota State Medical Association, Dr. Williams was granted associate membership in 1951. He was also a member of the Southwestern Minnesota Medical Society.

Dr. Williams was born at Pierrepont Manor, New York. He was a graduate of the University of Minnesota Medical School. After completing his professional training, he began the practice of medicine in Slayton and continued in that community until the time of his retirement in 1946.

Survivors include two daughters, Mrs. George Jackson, of Minneapolis, and Mrs. K. E. Sheffield, of Marshall; a brother, Dr. A. B. Williams, of St. Paul, and four grandchildren.

HARRY MATHEW WEBER

Dr. Harry M. Weber, a member of the staff of the Mayo Clinic for twenty-seven years, and head of the Section of Diagnostic Roentgenology in that institution since 1951, died October 4, 1958, in Saint Mary's Hospital, Rochester, Minnesota. He was fifty-nine years old.

Dr. Weber was born on June 30, 1899, at Lewistown, Montana. He was a student at St. John's University, Collegeville, Minnesota, from 1917 to 1921. He then attended the University of Minnesota, from which he received the degree of Bachelor of Science in 1924 and that of Doctor of Medicine in 1926. He was an intern in St. Joseph's Hospital, St. Paul, from January to June, 1925, and in Ancker Hospital, St. Paul, from July, 1925, to July, 1926. From July, 1926, to January, 1927, he was a physician at a construction camp at Berne, Washington.

Dr. Weber came to Rochester on January 1, 1927, as a fellow in radiology of the Mayo Foundation. On July 1, 1928, he was appointed a first assistant in roentgenology, and in October, 1931, he became a member of the staff of the Mayo Clinic as a consultant in roentgenologic diagnosis. He was appointed instructor in radiology in the Mayo Foundation Graduate School in 1932, was advanced to assistant professor in 1945, associate professor in 1948, and professor in 1954.

Dr. Weber, since 1935 a member of the Medical Corps of the U. S. Naval Reserve with the grade of lieutenant commander, was assigned to active duty in that grade on December 26, 1941, and returned to inactive status in the Naval Reserve one year later.

Dr. Weber was certified as a specialist in roentgen-

(Continued on Page A-64)



all cold symptoms

New timed-release tablet provides:

...the superior decongestant and antihistaminic action of Triaminic

...non-narcotic cough control as effective as with codeine, but without codeine's drawbacks

...an expectorant to augment demulcent fluids

...the specific antipyretic and analgesic effect of well-tolerated APAP

...the prompt and prolonged activity of timed-release medication

Each* TUSSAGESIC *Tablet contains:

TRIAMINIC®	50 mg.
(phenylpropanolamine HCl	25 mg.;
pheniramine maleate	12.5 mg.;
pyrilamine maleate	12.5 mg.)
Dormethan (brand of dextro-methorphan HBr)	30 mg.
Terpin hydrate	180 mg.
APAP (N-acetyl-para-aminophenol)	325 mg.

Tussagesic Tablets provide relief from *all* cold symptoms in minutes, lasting for hours.

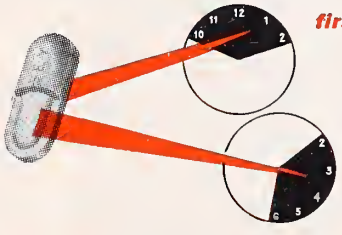
Dosage: One tablet in the morning, mid-afternoon, and in the evening, if needed. The tablet should be swallowed whole to preserve the timed-release action.

To reduce upper respiratory congestion and irritating secretions.

For non-narcotic control of the cough reflex.

To augment demulcent respiratory secretions.

For specific, highly effective antipyresis and analgesia.



first—3 to 4 hours of relief from the outer layer

then—3 to 4 more hours of relief from the inner core

Also available—for those who prefer palatable liquid medication—

Tussagesic suspension

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Pearl River, New York

HARRY MATHEW WEBER

(Continued from Page A-62)

ology by the American Board of Roentgenology, Inc., in 1934. He was elected president of the Minnesota Radiological Society, in 1940, and served as president of the American Roentgen Ray Society in 1953 and 1954. He was a fellow of the American College of Radiology and a member of the Minnesota State Medical Association, the Zumbro Valley Medical Society, the Southern Minnesota Medical Association, the Minnesota Radiological Society, the American Roentgen Ray Society, the Radiological Society of North America, the Rocky Mountain Radiological Society, the American Gastroenterological Association, the Alumni Association of the Mayo Foundation, the Society of the Sigma Xi, Sigma Chi academic fraternity and Phi Rho Sigma professional medical fraternity.

Survivors include his wife, Kathleen; three sons—Harry Osborn, a senior student in the University of Minnesota; Frederic William, a sophomore in the University of Notre Dame; and George Osborn, a student at St. John's Preparatory School, Collegeville, Minnesota.

Doubtless the man of ordinary parts has more enjoyment in this world, and lives a longer, and in some sort a happier life, than he who is of a loftier intellect. For a noble mind is likely enough to fret and torment its owner. But the first partakes more of the brute than of the man. The other transcends human nature and approaches the divine.—FRANCESCO GUICCIARDINI (1483-1540).

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Comments by investigators on

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—the remarkably efficient skeletal muscle relaxant, unique in chemical formulation, and outstanding for sustained action and relative freedom from adverse side effects.

PUBLISHED REFERENCES: 1. Carpenter, E. B.: Southern Medical Journal 51:627, 1958. 2. Forsyth, H. F.: J.A.M.A. 167:163, 1958. 3. Little, J. M., and Truitt, E. B., Jr.: J. Pharm. & Exper. Therap. 119:161, 1957. 4. Morgan, A. M., Truitt, E. B., Jr., and Little, J. M.: J. Am. Pharm. Assn., Sci. Ed. 46:374, 1957. 5. O'Doherty, D. S., and Shields, C. D.: J.A.M.A. 167:160, 1958. 6. Park, H. W.: J.A.M.A. 167:168, 1958. 7. Truitt, E. B., Jr., and Patterson, R. B., Proc. Soc. Exper. Bio. & Med. 95:422, 1957. 8. Truitt, E. B., Jr., Patterson, R. B., Morgan, A. M., and Little, J. M.: J. Pharm. & Exper. Therap. 119:189, 1957.

Supply: Tablets (white, scored), 0.5 Gm., bottles of 50 and 500.

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Ethical Pharmaceuticals of Merit since 1878

Summary of four new published clinical studies:

Robaxin Beneficial in 95.6% of Cases of Acute Skeletal Muscle Spasm[1, 2, 5, 6]

CONDITION	NO. PATIENTS	RESPONSE			
STUDY 1[1]		"marked"	moderate	slight	none
Skeletal muscle spasm secondary to acute trauma	33	26	6	1	—
STUDY 2[2]		"pronounced"			
Herniated disc	39	25	13	—	1
Ligamentous strains	8	4	4	—	—
Torticollis	3	3	—	—	—
Whiplash injury	3	2	1	—	—
Contusions, fractures, and muscle soreness due to accidents	5	3	2	—	—
STUDY 3[5]		"excellent"			
Herniated disc	8	6	2	—	—
Acute fibromyositis	8	8	—	—	—
Torticollis	1	—	—	1	—
STUDY 4[6]		"significant"			
Pyramidal tract and acute myalgic disorders	30	27	—	2	1
TOTALS	138	104 (75.3%)	28 (20.3%)	4	2

THE JOURNAL
American Medical Association

"In the author's clinical experience, methocarbamol has afforded greater relief of muscle spasm and pain for a longer period of time without undesirable side effects or toxic reactions than any other commonly used relaxants . . ."[2]

THE JOURNAL
American Medical Association

"An excellent result, following methocarbamol administration, was obtained in all patients with acute skeletal muscle spasm."[5]

THE JOURNAL
American Medical Association

"In no instance was there any significant reduction in voluntary strength or intensity of simple reflexes."[6]

Southern Medical Journal

"This study has demonstrated that methocarbamol (Robaxin) is a superior skeletal muscle relaxant in acute orthopedic conditions."[1]

General Interest

Dr. William Kosiak has been elected president of the medical staff of the Two Harbors Lakeview Memorial Hospital. Other officers elected included **Dr. Ralph Papermaster,** vice president and **Dr. Donald Haase,** secretary. Retiring officers are **Dr. Bernard L'Esperance,** president and **Dr. Eugene Rondeau,** secretary. Dr. Kosiak served as vice president during the preceding year.

* * *

Dr. James A. Johnson has been re-elected president of the board of directors, Hennepin county district, American Cancer society.

* * *

Mayo Clinic staff members recently appearing on programs abroad are as follows: **Dr. Grace Roth, Dr. F. H. Ellis, Dr. E. H. Wood** and **Dr. H. T. Mankin.**

* * *

Dr. J. A. Bargen presented the annual memorial lecture at Scott-White Clinic in Temple, Texas, in conjunction with the recent meeting of the alumni association of the clinic there.

* * *

Dr. G. K. Stilwell acted as medical consultant at the South Dakota Social Welfare, Public Health and Vocational Rehabilitation Conference at Huron, September 12.

* * *

Positive x-ray films plus positive sputum smears do not always equal pulmonary tuberculosis, three Mayo clinic staff members reported recently at the 59th annual meeting of the American Roentgen Ray Society in Washington, D. C.

Dr. C. Allen Good presented the report in collaboration with **Drs. David T. Carr** and **Lyle A. Weed.**

* * *

Dr. Howard D. Burchell, Rochester, has been appointed a member of the National Advisory Heart council. He has been professor of medicine in the Mayo Foundation in the graduate school of the University of Minnesota since 1946.

* * *

Dr. Robert N. Barr was the speaker at a recent meeting of a newly formed Mankato Committee on Aging. Dr. Barr outlined what to do about improving the situation of the aging in the state and how it can be accomplished.

* * *

Dr. Helen Knutson, Hospital Service Director of the Minnesota State Department of Health, was the speaker at a recent meeting held in Spring Lake Park which included representatives from the village councils of Coon Rapids, Blaine, New Brighton, Fridley, Circle Pines, Spring Lake Park, Mounds View and Lexington. A permanent committee is to be appointed to formulate plans for construction of a community hospital to serve the eight suburban villages.

Dr. Joseph Burnett, New Ulm, has become associated with the Tri-Mont Community Hospital X-ray department.

* * *

Dr. Robert B. Howard, new dean of the college of medical sciences at the University of Minnesota, gave the principal address "Medicine: Some Prospects, Challenges, and Opportunities" at ceremonies observing Minnesota Medical Foundation Day at the University. Twenty-four university medical students received scholarships totalling $12,250 at that time.

* * *

Dr. Donald Peterson, Northfield, a member of the Safety Committee of Minnesota State Medical Association, and William Olson, of William Olson Ambulance Company of Minneapolis, were speakers at the September meeting of the Southwest Medical Society held in Worthington. The subject discussed by the speakers was "Transportation of the Injured."

* * *

Dr. Harold C. Habein, a member of the Mayo Clinic staff for thirty-two years, head of a section of medicine from 1941 to 1953 and a senior consultant since then, has announced his retirement effective October 1. He plans to move to Wabasha and serve as consultant to the Wabasha Community Clinic and St. Elizabeth's hospital there.

* * *

Dr. W. S. Neff, of the Lenont-Peterson Clinic in Virginia, recently attended a meeting of the Committee on Aging of the American Medical Society held at the Chicago Drake Hotel. He was a delegate of the Minnesota State Medical Association.

* * *

Dr. Charles W. Mayo, Rochester, was honored by the American Medical Writers Association at the fifteenth annual meeting in Chicago recently. **Dr. Frank H. Krusen,** Rochester, also received an award.

Dr. Mayo was presented the 1958 honor award, which is given from time to time to non-members of the association who have made distinguished contributions in writing, editing, publishing or other means of communication in medicine and/or allied sciences.

* * *

Dr. J. C. Mickelson, urologist at the Mankato Clinic, gave the main address at the annual fall meeting of the Minnesota Association of Medical Record Librarians held Friday at St. Joseph's Hospital in Mankato. This is in conjunction with the Minnesota Hospital Association of the Minnesota Department of Health.

* * *

Two Mayo Clinic staff men, **Dr. Harold H. Scudamore** and **Dr. Robert B. Wilson** were recent speakers at the twenty-third annual meeting of the Mississippi Valley Medical Society in Chicago.

(Continued on Page A-68)

American Medical Association
Annual Clinical Meeting

A.M.A. BULLETIN OF THE AIR

Special Television Edition

Wednesday, December 3 6:15-7:00 p.m. Channel 4
WCCO-TV *Minneapolis*

Daily Radio Edition

Tuesday to Friday, Dec. 2-5 6:10-6:15 p.m.
WCCO-Radio 830 kc. *Minneapolis*

PRESENTED BY AMERICAN MEDICAL ASSOCIATION IN COOPERATION WITH MSD MERCK SHARP & DOHME

(Continued from Page A-66)

Dr. Richard M. Hewitt, retired Clinic staff member, and **Dr. George K. Stilwell** of the Mayo Clinic, members of the AMWA educational committee, served recently as consultants at a medical writers workshop.

* * *

Dr. P. R. Lipscomb, of the Mayo Clinic, is a member of the board of directors of the Mississippi Valley Medical Society and **Dr. J. A. Bargen**, also of the Clinic, is on the advisory committee.

* * *

At a recent meeting of the medical staff of the Lutheran Deaconess Hospital Minneapolis, the following officers were elected: **Dr. Russell C. Lindgren**, Chief of Staff; **Dr. Bernard A. Cohen**, Vice Chief of Staff; **Dr. Thomas B. Merner**, Secretary; **Dr. Harold M. Solvason**, Treasurer.

* * *

Dr. James T. Priestley, head of a section of surgery in the Mayo Clinic, Rochester, and professor of surgery in the Mayo Foundation, Graduate School, University of Minnesota, recently gave the thirtieth annual Arthur Dean Bevan Lecture before members of the Chicago Medical Society.

* * *

Dr. F. T. Becker and **Dr. O. G. McDonald**, Duluth, were exhibitors at the annual meeting of the Wisconsin Academy of General Practice in Milwaukee recently. They, with **Dr. J. J. Coll** and **Dr. H. G. Moehring**, also of Duluth, presented a panel discussion of some geriatric problems at the same meeting.

* * *

Dr. James C. Hunt, Rochester, has been appointed to the staff of the Mayo Clinic as a consultant in medicine. **Dr. Allan B. Gould, Jr.**, has also been appointed to the Mayo Clinic staff as a consultant in anesthesiology.

* * *

Dr. J. C. Feuling and **Dr. W. A. Swedberg**, Duluth, attended a two-day annual conference of the Minnesota-Dakota-Manitoba Orthopedic Society recently.

* * *

"Surgical Management of Repeated Late Abortions" by **Drs. Wm. B. Stromme, Sheldon C. Reed, Robert Wagner**, and **E. Wm. Haywa**, was presented at the annual meeting of the Central Association of Obstetrics and Gynecology at Minneapolis recently.

* * *

Dr. Stromme was a collaborator on a panel discussion of the subject "Prevention of Abortion by Surgical Procedures" at the forty-fourth annual American College of Surgeons meeting held recently in Chicago.

* * *

Dr. Frederic F. Wippermann and **Dr. Robert E. Rocknem**, Minneapolis, announce their association in the practice of Ophthalmology at 318 Doctors Building.

For Real Pain ...give real relief:

A.P.C. WITH Demerol® tablets

Each tablet contains:

Aspirin	200 mg.	(3 grains)
Phenacetin	150 mg.	(2½ grains)
Caffeine	30 mg.	(½ grain)
Demerol hydrochloride	30 mg.	(½ grain)

Average Dose:

1 or 2 tablets.

Narcotic blank required.

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Demerol (brand of meperidine), trademark reg. U.S. Pat. Off.

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The Twenty-Second Annual Meeting
of
The New Orleans Graduate Medical Assembly
Conference Headquarters – Roosevelt Hotel
March 2, 3, 4, 5, 1959

GUEST SPEAKERS

Paul R. Dumke, M.D., Detroit, Mich.
Anesthesiology
Otto H. Janton, M.D., Philadelphia, Penna.
Cardiology
Carl T. Nelson, M.D., New York, N. Y.
Dermatology
Clifford J. Barborka, M.D., Chicago, Ill.
Gastroenterology
Malcom E. Phelps, M.D., El Reno, Okla.
General Practice
Keith P. Russell, M.D., Los Angeles, Calif.
Gynecology
William Dameshek, M.D., Boston, Mass.
Internal Medicine
Howard P. Rome, M.D., Rochester, Minn.
Neuropsychiatry
R. Gordon Douglas, M.D., New York, N. Y.
Obstetrics
Maynard C. Wheeler, M.D., New York, N. Y.
Ophthalmology
Lenox D. Baker, M.D., Durham, N. C.
Orthopedic Surgery
Ben H. Senturia, M.D., St. Louis, Mo.
Otolaryngology
Francis Bayless, M.D., Cleveland, Ohio
Pathology
Lee F. Hill, M.D., Des Moines, Iowa
Pediatrics
Roy R. Greening, M.D., Philadelphia, Penna.
Radiology
John M. Dorsey, M.D., Evanston, Ill.
Surgery
F. Henry Ellis, Jr., M.D., Rochester, Minn.
Surgery
Fred K. Garvey, M.D., Winston-Salem, N. C.
Urology

Lectures, symposia, clinicopathologic conferences, round-table luncheons, medical motion pictures and technical exhibits.

(All-inclusive registration fee—$20.00)

THE CLINICAL TOUR TO MEXICO CITY, CUERNAVACA, TAXCO, ACAPULCO AND SAN JOSE PURUA

Leaving March 6 from New Orleans and returning March 21, 1959

For information concerning the Assembly meeting and the tour write
Secretary, Room 103, 1430 Tulane Avenue, New Orleans 12, La.

During the annual meeting of the American Academy of Ophthalmology and Otolaryngology at the Palmer House in Chicago, recently, **Dr. A. C. Hilding**, Duluth, presented a two-hour course on the instructional program on "The Micro-anatomy of the Cochlea and the Physiology of Hearing in Relation to Common Types of Hearing Loss." He also participated in a discussion of Dr. John Lindsay's presentation of "Histopathologic Observations Following Fenestration and Stapes Mobilization."

* * *

Dr. Virgil Schwartz, Minneapolis, attended the International Congress of Ophthalmology meeting held in Brussels, Belgium, recently.

* * *

Dr. W. B. Martin, Duluth, talked about coronary insufficiency at a recent meeting of the Minnesota Society for the Study of Diseases of Heart and Circulation and about a comparison of actuarial and clinical accuracy in the differential diagnosis of jaundice at the September regional meeting of the American College of Physicians in Milwaukee.

* * *

Dr. William A. O'Brien, Minneapolis, announces the opening of his office at 520 Marquette Bank Building with practice limited to Internal Medicine.

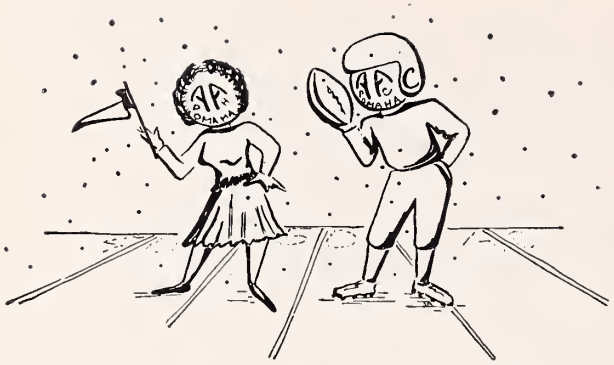
* * *

Dr. Owen H. Wangensteen, Minneapolis, chairman of the department of surgery at the University of Minnesota medical school since 1930, was recently named president-elect of the American College of Surgeons.



"THAT'S THE LAST FIRE-EATER I ASK TO SAY 'AH!'"

Dr. Wesley W. Spink, Minneapolis, was one of seventeen men invited from different medical centers of the world to participate in a Symposium on "The Biochemical Response to Physical Injury" held in Semmering, Austria, recently. Dr. Spink presented a paper on "Metabolic Factors Related to Bacterial Inflammation and Shock."



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Dr. Harry Friedman has been elected president of the Minneapolis Ophthalmological Society.

* * *

Dr. W. P. Eder and **Dr. C. D. Adkins**, Minneapolis, announce their association in the practice of General Surgery, with offices at 430 Marquette Bank Building.

* * *

Dr. O. Lewis Zahrendt, Minneapolis, has returned from a month's trip to Europe.

* * *

Dr. Milton Abramson, Minneapolis, was a guest speaker at the Eighth Annual Scientific Assembly of the Ohio Academy of General Practice in Toledo, Ohio. Dr. Abramson presented a paper on "Preparation for Marriage and Parenthood."

* * *

"Management of Varicose Veins and Complications" was the subject presented by **Dr. Herman O. McPheeters**, Minneapolis, before members of the Wisconsin Academy of General Practice, who met at the Milwaukee Auditorium recently.

* * *

Dr. Ronald G. Johnson, Minneapolis, formerly associated with the Bloomington-Lake Clinic, has opened new offices for the General Practice of Medicine at 4555 Bloomington Avenue.

* * *

"Triketopyrimidine Metabolism" was the title of the paper presented by **Dr. Robert P. Jeub** and **Dr. Ralph Rossen**, Minneapolis, at the joint meeting of the Central and Eastern EEG Societies, recently at Toronto General Hospital, Toronto, Canada.

* * *

Dr. William E. Petersen, Minneapolis, announces the opening of new offices at 743 Medical Arts Building, with practice limited to Internal Medicine.

* * *

One of six American specialists in physical medicine who were invited to visit spa facilities in Europe by the German Spa Association was **Dr. Miland E. Knapp** of Elizabeth Kenny Institute. The group spent approximately three weeks in Germany, Austria, and Italy.

* * *

Dr. Winchell McK. Craig, former head of the Section of Neurologic Surgery in the Mayo Clinic and emeritus professor of neurologic surgery in the Mayo Foundation, is a member of an around-the-world tour of the International College of Surgeons which will take him by airplane to Hawaii, Japan, Hong Kong, the Philippine Islands, Thailand, India, Egypt, Turkey, Greece, Italy, and Spain. Dr. Craig joined the tour party in Chicago and proceeded by air to the various points. He will return to Rochester, December 5.

* * *

Thirteen Minnesota physicians were among 1,110 surgeons recently inducted as follows of the American College of Surgeons. Honored were: **Drs. Howard R. Snider**, Mankato; **Samuel G. Balkin, Russell N. Frys, Joseph J. Garamella, Nathan K. Jensen**, and **George Werner**, Minneapolis; **Samuel L. Hamilton**, Red Wing; **Ross H. Miller** and **Reginald A. Smith**, Rochester; **John**



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1. Welsh, A. L., and Ede, M.: J.A.M.A. *166*:158, 1958.
2. Bleiberg, J.: J.M. Soc. New Jersey *53*:37, 1956.
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5. Clyman, S. G.: Postgrad. Med. *21*:309, 1957.

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F. Alden, Louis C. Lick, Loren E. Nelson, and **Joseph L. Sprafka,** St. Paul.

* * *

Twin City members of the Minnesota State Medical Association who have been appointed committee chairmen for the Minnesota Heart Association, 1958-59 program, are as follows: From Minneapolis—**Dr. Robert Good,** Rheumatic Fever Study Committee, and **Dr. M. B. Visscher,** Symposium Committee. From St. Paul—Dr. **John F. Briggs** Professional Education Committee. Dr. Karl W. Anderson, Minneapolis, is president of the Association.

* * *

Dr. Francis Jolin, founder of the Grand Rapids Clinic, has opened offices for the practice of medicine in Remer. He will maintain hours in that community from 10:00 A.M. until 4:00 P.M. on Monday, Wednesday, and Friday of each week.

* * *

Dr. Dale C. Cameron, Minnesota medical director, recently accepted a citation from the American Psychiatric Society on behalf of the Minnesota Welfare Department for its program of attracting volunteer aids to mental hospitals to assist regular staffs.

* * *

A report on Silo Filler's disease was given by **Dr. David Sontag,** president of the Wabasha County Medical Society, at the ninetieth annual meeting of that group held in Plainview.

Truman physician and surgeon, **Dr. M. J. Lester,** has completed plans for the addition of a building to his present offices. The offices will be shared by **Dr. John Lester,** physician and surgeon.

* * *

Dr. William C. MacCarty was honored recently in special ceremonies setting up the MacCarty Memorial Library in his old office in St. Mary's Hospital, Rochester. A bronze, bas-relief plaque of Dr. MacCarty, associated with the Mayo Clinic from 1907 until his retirement in 1948, was also placed at the entrance of his surgical pathology laboratory there.

* * *

Association members who participated on the speaker's program of the dedication of the new Community Hospital and Nursing Home at Cannon Falls included **Dr. J. M. Stickney,** counselor for the First District, and **Dr. G. M. B. Hawley,** president of the Goodhue County Medical Society. Addresses were also presented by **Drs. M. R. Williams** and **K. E. Molenar,** Cannon Falls physicians.

* * *

Addressing the opening session of the American Heart Association's thirty-third annual assembly was **Dr. C. Walton Lillehei** of the University of Minnesota. The assembly was held in San Francisco, California.

* * *

Several St. Cloud physicians participated in the program of the annual state convention of the Minnesota

Society of X-Ray Technicians held recently in that city. **Dr. E. M. LaFond** addressed the convention at its annual banquet and **Dr. J. P. O'Keefe** was the toastmaster.

* * *

A panel of Owatonna physicians highlighted the second general meeting for this year of the Owatonna Hospital Auxiliary held recently in the audio-visual room at the Washington school. The theme discussed was "Know Your Hospital." Participating physicians included **Dr. Daniel Halvorsen, Dr. Donald Honath,** and **Dr. John Huff,** members of a liaison committee of the Owatonna City Hospital Staff.

* * *

Dr. A. B. Baker, professor and director, division of neurology, University of Minnesota Medical School, was the recent recipient of a Presidential award in the area of rehabilitation. The award was made at the Mayor's committee conference on the employment of the handicapped held at the Calhoun Beach Hotel.

* * *

President of the National Tuberculosis Association, **Dr. Mario Fischer,** was the speaker at the fifty-second annual Christmas Seal Association dinner held recently at Coffman Memorial Union, University of Minnesota.

* * *

An addition is being built to the offices of **Dr. Carl Simison,** Barnesville physician. It will almost double the space of the present structure.

Dr. L. H. Henz has become an associate of **Dr. G. T. Schimelpfenig** of Chaska at the latter's clinic.

* * *

Chosen secretary of the Greater St. Paul Area Heart Council at the group's organizational meeting was **Dr. Donald Derauf,** West St. Paul. Named medical advisors to the council were nine St. Paul physicians: **Drs. Lloyd MacLean, John Briggs, William F. Mazzitello, Robert Reif, Frank Ubel, Ben Sommers, Samuel Hunter, William Lick** and **Benjamin I. Derauf.**

* * *

Dr. William A. Black, New Ulm, has been elected to the board of governors of the American College of Surgeons.

* * *

Recently serving on a four-man public information committee at the fifth annual meeting of the American Academy of Psychosomatic Medicine in New York City was **Dr. Kenneth W. Teich,** Duluth physician specializing in obstetrics and gynecology.

* * *

A talk on "Research Findings in Heart Surgery" was given by **Dr. Samuel Hunter,** assistant professor of surgery, University of Minnesota, at the meeting of the Twin Cities Society of Medical Technologists at St. Joseph's Hospital, St. Paul. Medical technology students from seven Twin Cities hospitals were honored on this occasion. Hospitals represented were Swedish, General, University and St. Mary's of Minneapolis, and St. Joseph's, Miller, and Ancker Hospitals of St. Paul.

* * *

In July, 1952, the Regents of the University of Minnesota accepted a gift from the late **Dr. William M. Boothby** of the Mayo Clinic and **Dr. W. R. Lovelace, II,** Director of the Lovelace Foundation in Albuquerque, New Mexico, in the amount of $18,000. This fund was set aside as a Surgical Travel Fellowship under the direction of the Department of Surgery at the University of Minnesota, the interest of which fund was to be used for travel by the trainees of the Department of Surgery to scientific meetings. Of seventeen trainees from the Department of Surgery who presented papers in the Surgical Forum at the Annual Clinical Congress held in Chicago, Illinois, October 6-10, 1958, the Boothby-Lovelace Fund provided travel for eleven men.

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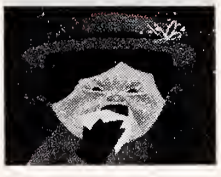
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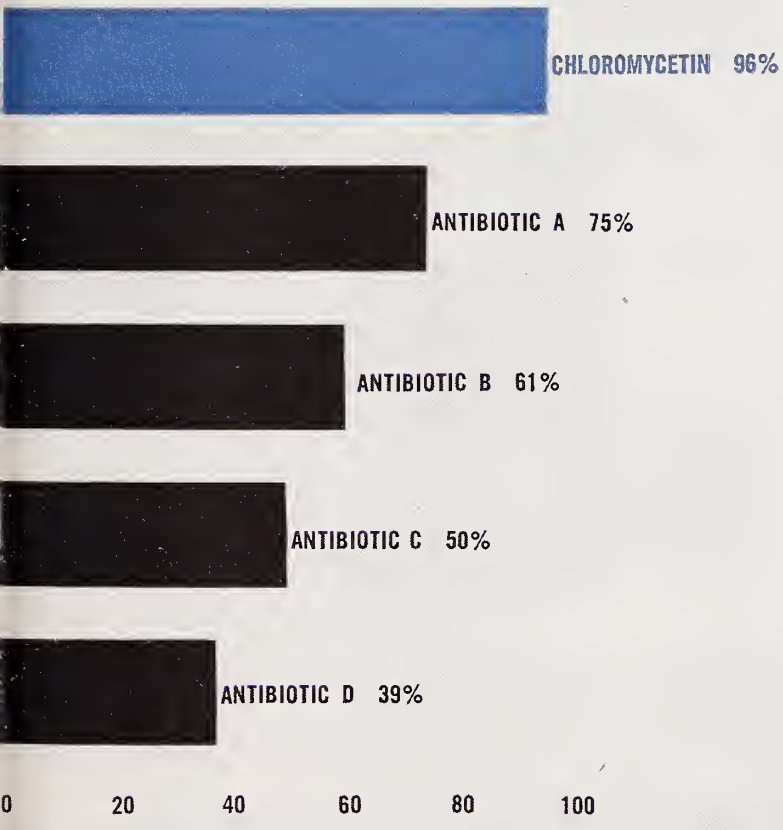
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REFERENCES: (1) Wise, R. I.: *J.A.M.A.* 166:1178, 1958. (2) Brown, J. W.: *J.A.M.A.* 166:1185, 1958. (3) Caswell, H. T., *et al.*: *Surg., Gynec. & Obst.* 106:1, 1958. (4) Godfrey, M. E., & Smith, I. M.: *J.A.M.A.* 166:1197, 1958. (5) Waisbren, B. A.: *Wisconsin M. J.* 57:89, 1958. (6) Royer, A., in Welch, H., & Marti-Ibañez, F.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 783. (7) Markham, N. P., & Shott, H. C. W.: *New Zealand M. J.* 57:55, 1958. (8) Blair, J. E., & Carr, M.: *J.A.M.A.* 166:1192, 1958. (9) Horan, J. M.: *Pediatrics* 19:36, 1957. (10) Rawls, G. H.: *Am. Surgeon* 23:1030, 1957. (11) Sarason, E. L., & Bauman, S.: *Surg., Gynec. & Obst.* 105:224, 1957. (12) James, U.: *Brit. J. Clin. Pract.* 11:801, 1957. (13) Turnbull, R. B., Jr.: *J.A.M.A.* 164:756, 1957. (14) Ross, S.; Puig, J. R., & Zaremba, E. A., in Welch, H., & Marti-Ibañez, F.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 803. (15) Leachman, R., & Yow, E. M., in Conn, H. F.: Current Therapy 1958, W. B. Saunders Company, Philadelphia, 1958, p. 51.

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Most adults fail to realize that their impatience with a thorny child often reflects their own childhood patterns. American parents need to spend more time with their offspring. Family physicians can often help "thorny" family situations.

The Thorny Youngster

HYMAN S. LIPPMAN, M.D.
Saint Paul, Minnesota

Presented in the Symposium on Mental Health, Minnesota State Medical Association, Minneapolis, May 24, 1958.

A THORNY youngster is a troubled youngster. His irritating behavior is his way of letting others know he is in a state of tension. He usually knows that his behavior disturbs others, because most people react to him with hostility. And yet his behavior does not change. The way he behaves is the only way he can behave and the way he will continue to behave—unless something is done to lessen his unrest.

If his thorny behavior is longstanding, he is suffering from character or personality disturbance which is difficult to change, but he can respond when his needs are met—when he will no longer have cause to fight back. It is unlikely that any child or adult wants to be hateful, without a good reason. Life is much pleasanter when someone smiles at us, is glad to see us and be with us. We are pleasant and able to give of ourselves, when we are relaxed and comfortable and feel loved. This is rarely if ever true of the thorny youngster.

By thorny behavior I mean that which irritates, annoys or angers. This includes many kinds of behavior such as defiance, teasing, cruelty, disrespect, obscenity and physical attacking, to mention only a few. Whenever people react strongly to disturbing behavior in a youngster, one must suspect that they have been made deeply anxious by the behavior.

Most people are annoyed and angered by several kinds of thorny behavior in youngsters. Few of us are free from a reaction of anger when a youngster swears at us, attempts to belittle us, or is openly belligerent and attacking. We sense the hostility in his behavior and reflexly fight back. We can control this impulse if we recognize that the youngster is psychotic, feebleminded, or in a state of acute panic. Those who are trained to work with hostile youngsters are more successful in holding back their own hostile feelings, but generally speaking, most people subjected to hostile, baiting youngsters, react with resentment and hostility. This is understandable when we take into account the fact that we all have considerable amounts of hostile aggression as a part of our inheritance, and have had to repress this hostility into our unconscious early in life in order to continue to be accepted and loved by our parents. Since these hostile drives are powerful, we did

not give them up without a real struggle. The struggle to hold back this hostility is so great for some individuals that throughout their lives they are unable to express aggression or hostility even when it is called for. They suffer because of this.

The fact that most of us are able to repress our impulses of hate and destruction does not mean that these urges no longer exist. They continue to exist in our unconscious mind, retaining their power to become activated in all their fury when conditions are ripe for this. The essential fact is that since we have made such an effort to control our hostile urges we expect others to do the same, and so when we come in contact with youngsters who are hostile and hateful we react with bitterness and resentment to them.

We see this strikingly in our attitude toward the criminal. Our first reaction on learning of his criminal behavior is to see to it that he is punished, and only later are we able to accept the fact that he needs to be understood and treated. Those who are most insistent that the criminal be punished usually have had the greatest struggle to control their own early aggression. In attacking the hostile aggression of the criminal they are indicating that they are still condemning their early destructive wishes. They are constantly on the lookout lest these wishes find an outlet in their behavior, and they are threatened by this danger. Our reaction, then, to the hostile youngster is based on below-the-surface factors, as well as on surface annoyances.

Certain kinds of behavior, though unpleasant to most people, are particularly disturbing to a limited number of people. This is a result of their early specific life experiences that have made them unable to tolerate these particular kinds of behavior. A father who, in his early life, was afraid of any physical aggression is quite likely to be very unset if his son refuses to fight when attacked by a youngster who is smaller but more aggressive. This situation calls to his attention his own early inadequacy, and his feeling of shame for having been so afraid to fight when he was a boy. Even worse, it depresses him to realize that his child will have to experience the same humiliations to which he had been subjected. Such a father will do anything to spare his son this grief.

Few fathers can tolerate feminine behavior in their boys. They know how most people react to an effeminate boy, how they ridicule him and imitate his effeminate movements. Effeminate behavior in boys is rejected by both sexes, since it is abnormal behavior and therefore threatening. It is not surprising that a father whose manners and interests have a strong feminine coloring which he may not recognize, will be *especially* concerned by effeminate behavior in his son. A child quickly senses this anxiety in his father and responds to it by becoming increasingly insecure.

Controlling parents find defiant behavior in their children very annoying. Such parents are usually unaware that they themselves are controlling, and often use undue pressures to hold back relatively normal aggression and demands in their children. It is interesting to note how seldom controlling parents are aware of the subtle pressures they use to control others. We see frequent results of unreasonable control by parents in the sudden outbursts of violence in youngsters who come to the Clinic for study.

Parents, whose dependency needs have not been sufficiently satisfied, and who later refuse to countenance any tendency in themselves to be dependent on others, overreact to behavior in their child that indicates dependency and passivity. Such parents early may forcefully demand that their children be independent and make their own decisions. In doing so, they deny the child the opportunity early, of being dependent on those he loves. This basic need is important for a feeling of security.

Many parents who are sensitive and emotionally labile, are disturbed when their child shows that he, too, is overly sensitive. When their child cries easily, is unable to tolerate denial, is shy, and timid, blinks his eyes, makes throat noises, or is passive, these parents are uncomfortable and are likely to exert undue pressure in an effort to stop the behavior that makes them anxious.

Not all behavior which is annoying and irritating to adults needs to be explained by similar behavior in the adult's own life which had to be rejected and repressed. Many adults, and perhaps most, have been brought up to feel that acting out, mean, dishonest, selfish behavior is bad behavior. They have grown up accepting the standards of their parents or teachers or others with whom they are identified, and react with annoyance or anger or impatience when they are subjected to these indignities.

Adults rightly expect youngsters to be willing to give as well as receive, to be fair in games and make an effort to be helpful. They are justified in being displeased with the violation of codes of

decency, but must also keep in mind that there are reasons for unpleasant behavior.

Unfortunately, knowing that there are reasons for the irritating behavior does not in itself modify the behavior. Something more must be done to effect a change.

I stated earlier that when thorny behavior is longstanding it is often due to character disturbance. More often, however, youngsters manifest behavior that is irritating to their parents and others, but which is not imbedded as character traits, and which may respond to simple measures. An opportunity for the parents to sit down and talk over the behavior with the child, may reveal what is making him uncomfortable and/or unhappy. The parents' talking together about their child may help to locate factors in the home that justify the youngster's protests. When parents believe that the demands of their children are unreasonable, they use their own means of discipline. They may make mistakes in the forms of discipline or punishment they use, but so long as they have deep affection for their child, and he is comparatively secure, the harm they do can be easily undone. Parents would do well to take time from their busy schedules to learn more about their children. They may have to spend much more time with them later on for not having been closer to them. The better they know their youngsters, the more intelligent will they be in dealing with them.

For the youngsters of longstanding annoying behavior, more will be required. I am sure that many parents ask physicians for advice as these problems arise in their families, especially if the doctor has cared for their health problems for many years and knows the family intimately.

It is well to look for the possible sources of irritation to the youngster. What are the parents like? How do they feel about this child? Is there favoritism in the family for another child? What kind of discipline do they use? Do the parents quarrel a great deal? Do they drink excessively? Are they too demanding, too rigid, too indulgent?

What opportunities does the youngster have to do well in anything that is socially acceptable? How does he achieve in his school work? What does the school report about his attitude and motivation? Does he have any religious affiliations? What character-building groups does he belong to? Does he belong to an *anti*-social group?

The answers to these questions may supply information that will help lessen tensions. You may gather this information yourselves or have it gathered by the visiting teacher or social worker in a family service agency. If the problem is serious enough to require your time, it is serious enough to require their's. Many of these problems respond to treatment efforts.

Interviews you may have with the youngster will help to locate tensions within him that disturb him. Such interviews cannot be hurried. The youngster must feel from the outset that the adult accepts him consistently, regardless of his statements or behavior. Only through a trusting relationship with the adult will the youngster be willing to talk about his personal problems and reveal his true feelings. When he is sure he will not be ridiculed, he will chance telling about his gnawing hatred of his parents and other authority figures in his life. He may also learn that alongside this hostility there is a good deal of affection for his parents. The way he feels about his experiences is more meaningful than reports others have made, because his feelings determine his behavior.

Removal of external pressures and the opportunity to talk out feelings may be all that is needed to modify disturbing behavior. When, in the process of relating to the adult, the youngster takes over the adult's attitude and social standards, treatment is facilitated and a better result can be anticipated.

Many youngsters are unable to trust a warm understanding adult; they have been disillusioned and doublecrossed by adults. They may test the adult repeatedly before being willing to trust him. Some youngsters who are excessively hostile may have a need to project their hostile feelings onto the adult. This makes the adult a hateful person, and justifies the youngster's hate and distrust. Such youngsters require long-time therapy from therapists especially trained to deal with pathologic behavior. Intensive study and treatment in a child guidance clinic or in a residential treatment center may be required.

Most of you will lack the time required to help youngsters who have some of the kinds of character problems mentioned. Some of you may have special talent in winning the confidence of disturbed youngsters. The realization that their whole future emotional adjustment to life might be affected by your help may motivate you to make a contribution in this direction.

The Querulous Primigravida

Are you being plagued with multiple questions from the young expectant mothers? Here is a concise and refreshing article which will help you to approach this problem with equanimity.

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THE WORD *querulous* has an additional meaning for this author—"hopeless." Hopelessly finding fault—hopelessly, habitually complaining—hopelessly fretful and fearful. Certainly anyone in obstetrics sees this patient—usually a young girl away from the protection of her previous home life, attempting with her equally young husband to make a new home for themselves.

Suddenly an event happens. She misses a period, her breasts become sore, her digestive processes are upset, she thinks she is going to have a baby.

Her first impulse is that she is happy and she tells her husband and he is happy. Then she talks to her friends, usually women who have had babies themselves.

It is tragically true that women have a sadistic compulsion in this regard. There is nothing the "old campaigner" pregnancy-wise loves to do more than to give a young girl, pregnant for the first time, some "good sound advise." She describes her own past pregnancies and labors in gruesome details, with herself as the central brave heroic figure.

Following these harrowing experiences she finally goes to the doctor. By this time she is *really querulous* and furthermore she is distressed physically, she is nauseated and vomits.

The doctor takes her history with a kindly tolerance, the technician takes blood out of her arm with a cheerful smile and the doctor does the physical and everything is fine. She is given her vitamin pills and calcium and told what to eat and what not to eat and what to do and what not to do. She is told to come back in four weeks and she is launched on her career of motherhood, but she is still querulous!!

In the months and weeks that follow, she visits

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Querulous: Apt to find fault; habitually complaining. Expressing complaint; fretful; peevish.

the doctor regularly for her prenatal visits. She will sit for hours on end waiting for her little friendly pat and advice. Obstetricians notriously keep patients waiting. The very nature of their practice decrees this. It is not his fault, but to the patient there is an element of frustration after waiting an hour or so and then having the visit over within two or three minutes, the doctor being too busy to answer any questions and she not being able to remember her questions that she planned to ask, anyway, because of the great rush into the examining room to be weighed and gotten ready for the doctor.

One of the greatest "time-savers" as far as the doctor is concerned is to startle the patient with something, so that all thought of questions and conversation leaves her mind in thinking about that startling something. The doctor can then make a quick exit leaving the patient to ponder over this situation. One of the most startling situations that happens during pregnancy is the weight-gain. Anybody who is gaining three to five pounds and more every month is a little upset by it.

There are "old doctors' tales" just as there are "old wives' tales." One of the oldest, most fallacious, doctor-tales is regarding weight-gains in pregnancy. The doctor feels that patients who gain too much weight are more prone to develop toxemia of pregnancy, forgetting the fact that what he is really worried about is a sudden weight gain during the last trimester due to fluid retention. He feels that excessive weight-gains will produce a larger baby, forgetting the fact that it has been proven over and over again that there is no relation of weight-gain to baby size. The doctor feels that excessive weight-gain will prolong labor, forgetting the fact that this is utterly ridiculous if the boney pelvis is adequate.

In the end, the only importance of excessive weight-gain is from the standpoint of the patient's comfort and appearance and yet doctors will emphasize and re-emphasize to the patient the terrific importance of their excessive weight-gains, so that the weight becomes one of the most prominent apprehensions of the pregnant woman. It is a time-saver for the doctor, but it makes our little querolous primigravida more querulous than ever. It is human nature to want something desperately that we can't have. The doctor's advice about weight-gain (plus the nervous apprehension associated with it) only serves to increase the desire to nibble and eat sweets and gain.

The hemoglobin determination in pregnancy represents another quick time-saver for the doctor. A patient can be startled quite effectively upon learning that her hemoglobin is dropping. It's supposed to drop because the blood volume increases and the blood dilutes. After the baby is born the blood volume contracts, the blood concentrates and the hemoglobin goes up. Normal hemoglobin is 10 gm. or more per 100 cc. Only 25 per cent of pregnant women actually have anemia—another fear for the hopeless querulous primigravida which could be avoided.

One of the matters that doctors like to talk about and probably over-emphasize and thus create some worry, is that of the importance of calcium. In all probability the old saying "for every child a tooth" is not because of lack of calcium. The Chinese diet is notoriously lacking in calcium and yet the Chinese women have very little dental caries. When one considers the long-time metabolism of the teeth, calcium has obviously no importance.

Calcium is, in all probability, only important when there are muscle cramps and tetany. When this occurs the diet is calcium-deficient and the patient should be given calcium, usually not the phosphate, which tends also to produce leg cramps.

In the last few years there has arisen a new terrifying spectre for the poor primigravida and that is when she finds she is Rh-negative.

We could go on for a long time naming startling but normal conditions and changes which can worry pregnant women. The doctor's duty should be to interpret these conditions and changes for the patient and present them to her without eliciting worry by careful, thoughtful explanation.

Time will not permit me to go into the horrors of the labor room for our poor little primigravida but improvements are coming. New hospital construction will provide individual labor rooms. Nurses are learning the importance of the kindly attitude. Doctors are learning better anesthetic methods and getting away from the raving maniac "scopolamine jags." Perhaps someday the primigravida will not be so terribly querulous.

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The Confused Senior Citizen

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The problem of the confused aged individual constitutes a major challenge of contemporary society. Loneliness, idleness, helplessness and hopelessness all lead to a confused senior citizen. The confusion of the aged can no longer be satisfactorily explained away by the reference to the word "senile"; but rather the true causes must be met and solved.

EVERY DOCTOR, whether rural or urban, who has practiced in Minnesota for fifteen to twenty years remembers the typical family unit of that era. This unit consisted of Mother, Father (probably out of work), four or five children and either Grandma or Grandpa or both, or even an elderly aunt.

The elder senior citizen was not confused *then*. First, there were fewer elderly people. Recent censuses, geriatric studies, and medical papers of countless numbers all point out the rapidly increasing number of people over sixty-five. Second, the elder senior citizen was a part of the family. They belonged—and were useful. How were they useful? They baby-sat, washed dishes, helped cook, mended and darned, did odd repair jobs and other so-called menial, but necessary, tasks. They were useful and what is more important, they felt needed.

Contrast the present-day family unit—Mother, Father, and two children in a two-bedroom rambler. Where are Grandma and Grandpa? They are either living alone in their own house with Grandpa retired, or in a drab rented room, rest home or institution—not needed, not wanted, not useful, and certainly confused.

Maybe these two contrasting pictures will help us understand why loneliness, idleness, helplessness, hopelessness, lack of social interests, and absence of physical outlets lead to the confused senior citizen.

Twenty years ago the physical energy in running the home was greater. There were potatoes to be peeled, vegetables to be scrubbed and bread to bake. There was no going to the freezer and pulling out a TV dinner that even has the calories counted for the reducer. Laundry was no simple problem. The automatic washer and dryer are present-day necessities. The extra hands provided by the elderly person were needed and useful. Now Grandma is not even needed to baby-sit. That task is taken over by the teenagers who use the money thus earned to buy Elvis Presley records.

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Obviously, the solution to the problem of our confused senior citizen is to make him useful, needed and wanted. If only it were that simple and easy. Fortunately, much progress is being made to attain this goal. We have to realize that not all mental disturbances in the older person are due to senile or arteriosclerotic dementia. The emotional problems may be precipitated by medical, psychological or social conditions.

Medically, there are now countless worthwhile medicaments and procedures at our disposal and more are being added daily to help the physical side of our older person. The list is long—the sedatives, the stimulants, the androgens and estrogens, the protein tissue builders, the tranquilizers (horrid word—NO), and so forth. More important than all these drugs is the realization that our senior citizens are an entity to themselves. The field of geriatrics is taking its place in medicine and making itself felt just like pediatrics did years ago.

What about the social-psychologic progress to unconfuse the confused? What is being done, or what can be done for the confused elderly citizen? To mention a few of the plans in force now—in Philadelphia[1] the organization called "Meals on Wheels" delivers hot nutritious balanced meals five days a week to lonely and infirm oldsters. "Meals on Wheels" started in England and is spreading through the United States. Certainly assured adequate nutrition will keep some of our older people out of state institutions.

In England[2] recognition has taken place of the stress and strain imposed on relatives caring for aged neurotic confused oldsters in their homes. A

plan of "six weeks in and six weeks out" has been developed. The older person spends six weeks in an institution and six weeks at home. This gives the family unit of today a respite. Our first family unit, as described, had no choice but to keep Grandma with them all the time. In that era there was neither money nor a place to send the older person to give the family a rest. Many of our families in the second described unit would or could keep their elderly relatives with them if they knew they both could have rest periods. Even the older person likes the company of people his own age level.

New York City has two controlled programs to meet the special needs of the individual older people. Plan One—day centers for persons over sixty years of age, professionally supervised, offer planned programs with a wide choice of activities (including arts and crafts, trips, excursions, discussions, performance with instrumental, choral and acting groups, and participation in committee assignments.) Plan Two—A Senior Citizen Service Corps for persons over sixty years of age engaged in voluntary community service, which includes visiting hospitalized or homebound older persons and performing simple services for them. Projects such as packaging surgical supplies for voluntary hospitals and sewing for the cancer committee, et cetera, are also included in their program.

Closer to home, we have much progress being made to understand the problems of our elderly confused citizen. On November 9, 1956, the Hennepin County Town Meeting on Aging[3] was held. This meeting was sponsored by the Community Welfare Council, a division of the Community Chest and Council, in response to a request from the Governor of Minnesota, Orville L. Freeman. The problems of aging were discussed under many headings including community planning, adult education, employment, health, housing, recreation and social work, pre-retirement counseling, and social welfare.

In Minneapolis, we have the Council House for Senior Citizens. The number-one project in any program to unconfuse the senior citizens should start with a center where the oldsters can go to be useful, needed and wanted. Our efforts will then be directed toward the extension of vigor, enthusiasm and usefulness of our oldsters.

Our present "society" is spending much energy toward youth. With longer life expectancy and more old people swelling our population, totals with fewer oldsters being taken care of by strong family units, we must direct more of "society's" energy to the senior citizen.

Bartz[4] states that purposeful activity is the most potent agent in the fight against premature deterioration. Aring[5] maintains that isolation is the cause of senility. Neither improvement in medical care nor the expected increase in the number of older people developing psychoses due to their longevity explain the increase in mental hospital admissions of people over sixty-five.

Isolation—the feeling of being not wanted or *needed* does explain the increase.

Therefore, we must direct our thoughts and energies to keeping the oldster busy—enlarge his recreational interests, develop his hobbies, widen his educational aspects, and make him feel wanted.

What role does the practitioner—the family doctor—play in this important ever-enlarging field? The social and emotional causes of failure in our patients must be met at a much earlier age than sixty-five or when actual confusion sets in. Our patients must be reached at an age-level of forty-five to fifty-five years so we can help them either delay or allay this thing we call confusion in the older years.

The medical needs of the elderly citizen are well taken care of. The social-emotional needs of elderly citizens still must be met.

Summary

In this paper, I have attempted to show why the senior citizen is confused and feels not wanted or needed. A brief random sampling of what is being done to change this situation is pictured. The 18,000 separate articles[6] published on geriatrics from 1936 through 1956 show that the medical profession is aware of its responsibility.

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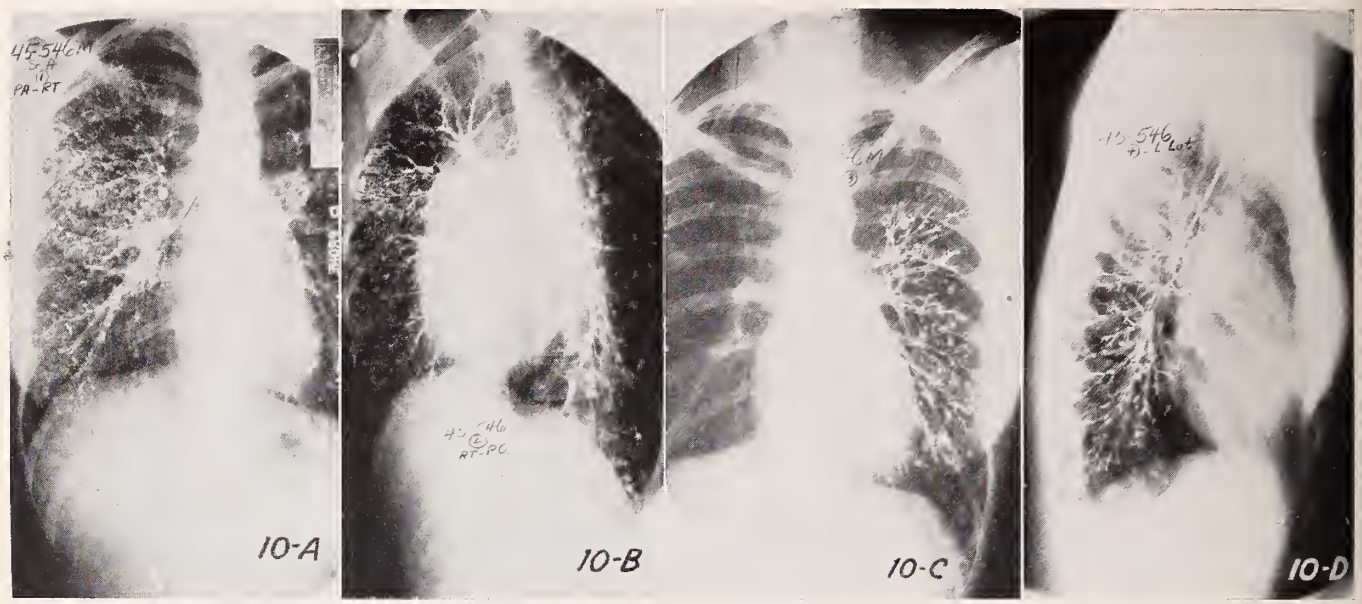


Fig. 10 (Case No. 45-546. (a) Postero-anterior and (b) right posterior oblique views of normal right lipiodol bronchograms. Note the peripheral filling, and some alveolar filling, a frequent and undesirable feature of this type of contrast medium. (c) Postero-anterior and (d) left lateral views. Note relatively poor peripheral filling due to left-sided emphysema, with very little alveolar filling.

Broncho-pulmonary Segmental Anatomy and Bronchography

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PULMONARY segmental resection or excision of a small local area of disease in a portion of a segment requires an exact definition of the location and extent of involvement for the benefit of the thoracic surgeon. The tendency of certain lesions to relate themselves to specific pulmonary segments or even certain bronchial sub-segments is of great clinical significance to the chest diagnostician. The roentgenologist obviously must describe pulmonary lesions in terms of segmental distribution and bronchial supply. The facts of bronchopulmonary segmental anatomy have been firmly established in recent years; the terminology previously used in description of the anatomical location of disease has been varied and confusing. A simplified, standardized, and universally-accepted system of nomenclature would unify our common conception of the location and limits of pulmonary and bronchial disease. Familiarity with the basic normal segmental and bronchial pattern and the significant variations, is a responsibility that must be accepted by all physicians interested in pulmonary disease. The investigations of Boyden[1] and his associates have made available excellent bronchopulmonary anatomical diagrams and his suggested terminology and system of enumeration is ideally suited to meet the modern-day needs of the thoracic surgeon, the internist and the roentgenologist.

Historical Review

The detailed history of the development of our knowledge of the anatomy of the bronchial tree has been reported by Boyden.[1] The facts of interest to the roentgenologist will be briefly reviewed, based largely on Boyden's historical survey.

As early as 1685, Diemerbroeck, in Utrecht, produced a diagram displaying all of the now-recognized bronchial segments. Aeby, in Germany, in 1880, established the fact of asymmetric branching of the bronchial tree; and, Hasse, in 1892, showed in his drawings the bronchial tree in the framework of the lung. Ewart, in England, in 1889, published extremely detailed and somewhat con-

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fusing diagrams, and pointed out that the lung must be divided into segments smaller than lobes. In this country, Kramer and Glass, in 1932, described the "bronchopulmonary segment." They

SEGMENTAL BRONCHI

Superior lobe (Right)
- B^1 - *Apical bronchus*
  - B^1a - apical ramus
  - B^1b - anterior ramus
- B^2 - *Anterior bronchus*
  - B^2a - posterior ramus
    - B^2a 1 - superior subramus
    - B^2a 2 - inferior subramus
  - B^2b - anterior ramus
- B^3 - *Posterior bronchus*
  - B^3a - apical ramus
  - B^3b - posterior ramus

Superior division (left superior lobe)
- B^1 plus 3 - *Apical-posterior bronchus*
  - B^1a, B^3a - apical rami
  - B^1b, B^3b - anterior and posterior rami
- B^2 - *Anterior bronchus*
  - B^2a - posterior ramus
  - B^2b - anterior ramus

Middle lobe (Right)
- B^4 - *Lateral bronchus*
  - B^4a - posterior ramus
  - B^4b - anterior ramus
- B^5 - *Medial bronchus*
  - B^5a - superior ramus
  - B^5b - inferior ramus

Inferior (lingular) division (Left)
- B^4 - *Superior lingular bronchus*
  - B^4a - posterior ramus
  - B^4b - anterior ramus
- B^5 - *Inferior lingular bronchus*
  - B^5a - superior ramus
  - B^5b - inferior ramus

Right inferior lobe
- B^6 - *Superior bronchus*
  - B^6a - medial ramus
  - B^6b - superior ramus
  - B^6c - lateral ramus
- B^{7} - *Subsuperior bronchus*
  - BX^{8} (10) - accessory subsuperior bronchus
- B^7 - *Medial basal bronchus*
  - B^7a - anterior ramus
  - B^7b - medial ramus
- B^8 - *Anterior basal bronchus*
  - B^8a - lateral ramus
  - B^8b - basal ramus
- B^9 - *Lateral basal bronchus*
  - B^9a - lateral ramus
  - B^9b - basal ramus
- B^{10} - *Posterior basal bronchus*
  - BX^{8} (10) - accessory subsuperior ramus
  - $B^{10}a$ - laterobasal ramus
  - $B^{10}b$ - mediobasal ramus

Left inferior lobe
- B^6 - *Superior bronchus*
  - B^6a - medial ramus
    - B^6a 1 - paravertebral branch
    - B^6a 2 - posterior branch
  - B^6b - superior ramus
  - B^6c - lateral ramus
- $B^{}$ - *Subsuperior bronchus*
  - $BX^{}$ (9), BX^{8} (10) - accessory subsuperior bronchus
- B^7 - *Medial basal bronchus*
  - B^7a - lateroanterior ramus
  - B^7b - medioanterior ramus
- B^8 - *Anterior basal bronchus*
  - B^8a - lateral ramus
  - B^8b - basal ramus
- B^9 - *Lateral basal bronchus*
  - $BX^{}$ (9) - accessory subsuperior ramus
  - B^9b - basal ramus = B^9
- B^{10} - *Posterior basal bronchus*
  - BX^{8} (10) - accessory subsuperior ramus
  - $B^{10}a$ - laterobasal ramus
  - $B^{10}b$ - mediobasal ramus

Fig. 1. Boyden's suggested bronchial terminology. (From Boyden, Edward A.: Dis. Chest, 15:6, June, 1949.)

injected fluid dyes into the main bronchial divisions and produced the first diagrams of the surface distribution and relationship to the thoracic cage by means of bronchograms. Refinements in segment analysis were added by Nelson (1934) and Lucien and Weber (1932-1936). (The above portion of the review from Boyden).[1] Churchill and Belsey[2] (1939) showed that the pulmonary segment is a surgically-removable unit and this profoundly stimulated the need for complete analysis of smaller bronchial structures, as well as for determining the exact extent of disease processes. Peirce and Stocking[3] (1939) published detailed bronchial diagrams including oblique projections as seen on the roentgenogram with a complex latin-based system of terminology.

Foster-Carter[4] (1942) published excellent detailed bronchial diagrams, including lateral projections. The significant studies of Brock[5] (1942-1944) accurately diagramed the relationship of lung segments to the thoracic wall and his Wood's metal casts of the bronchial tree produced excellent detailed diagrams of the normal distribution and configuration of the bronchial tree as seen in bronchograms, including the major variations. Jackson and Huber[6] (1943) introduced a now widely-accepted system of bronchial terminology, with relatively simple and accurate diagrams of the usual pattern of branching, with drawings of the bronchoscopic appearance of the orifices. Appleton[7] (1944) described frequent variations in the mode of branching of the right upper lobe bronchus. Foster-Carter and Hoyle[8] (1945) demonstrated the radiographic appearance of the segments in disease processes, identifying collapse and consolidation. Boyden,[1] of the University of Minnesota, who considers his studies a continuation of Brock's[5] work, after years of painstaking and meticulous lung dissections and injections (1945-54), presented a highly detailed analysis of the normal bronchial and vascular patterns, both segmental and subsegmental, with also the significant variations. The prevailing pattern of each lobe has been firmly established by most exacting and detailed investigations of large numbers of each lobe. The normal pattern, as well as the significant variations, have thus been placed on a statistical basis. A simplified numerical system of identification of the segments and subsegments, invaluable to the roentgenologist, has also been presented. His system is basically the Jackson-Huber terminology with minor variations.

Temple and Evans[9] (1950) using the Jackson-Huber terminology, reviewed the roentgen features of pulmonary segmental lesions, chiefly from plain films, but a few demonstrations of contrast filling of various segments were included. Krause and Lubert[10] (1951) stressed the application of anatomic knowledge of the various subsegments and the importance of demonstrating bronchial occlusion by means of bronchograms. Their diagrams are based on the Jackson-Huber and Boyden systems of terminology. Bronchographic demonstrations of the entire bronchial tree, or complete mapping of all the segmental and important subsegmental branches, is not presented in these publications.

A particularly significant publication from the standpoint of bronchopulmonary segmental radio-

graphic interpretation is that of Kane[11] (1952). He presented accurate diagrams of the radiographic density of distributions of the various bronchopulmonary segments as seen in the plain film of the chest, which can be correlated readily with the bronchial branches supplying these areas. He employed the Jackson-Huber nomenclature.

Hoden and Crone[12] (1953) reported on the use of oily Dionosil® as a bronchographic contrast medium, which they considered adequate, with little irritation and with only slight after-effects.

Crellin *et al*[13] (1954) emphasized the importance of complete five-lobe filling of the bronchial tree, using the trans-nasal endobronchial catheter method of administration of Lipiodol.® No post-bronchoscopic complications were encountered in a series of 503 cases. Excellent bronchograms, showing complete fillings of the normal bronchial tree, were reproduced. Norris and Stauffer[14] (1954) published bronchograms of outstanding quality with adequate filling of the entire bronchial tree, using both aqueous and oily Dionosil.®

Most excellent bronchograms and accompanying colored diagrams, which serve as valuable reference material, were published in 1955 by Lehman and Crellin.[15] Nice and Azad[16] (1956) reported on the use of oily and aqueous Dionosil® in seventy-four cases, noting no unusual irritability, little tendency toward alveolar filling, better diagnostic film studies because of unhurried examinations and rapid clearing of the contrast material from the pulmonary fields.

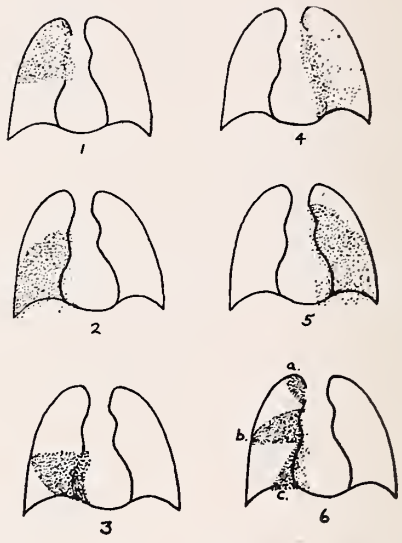
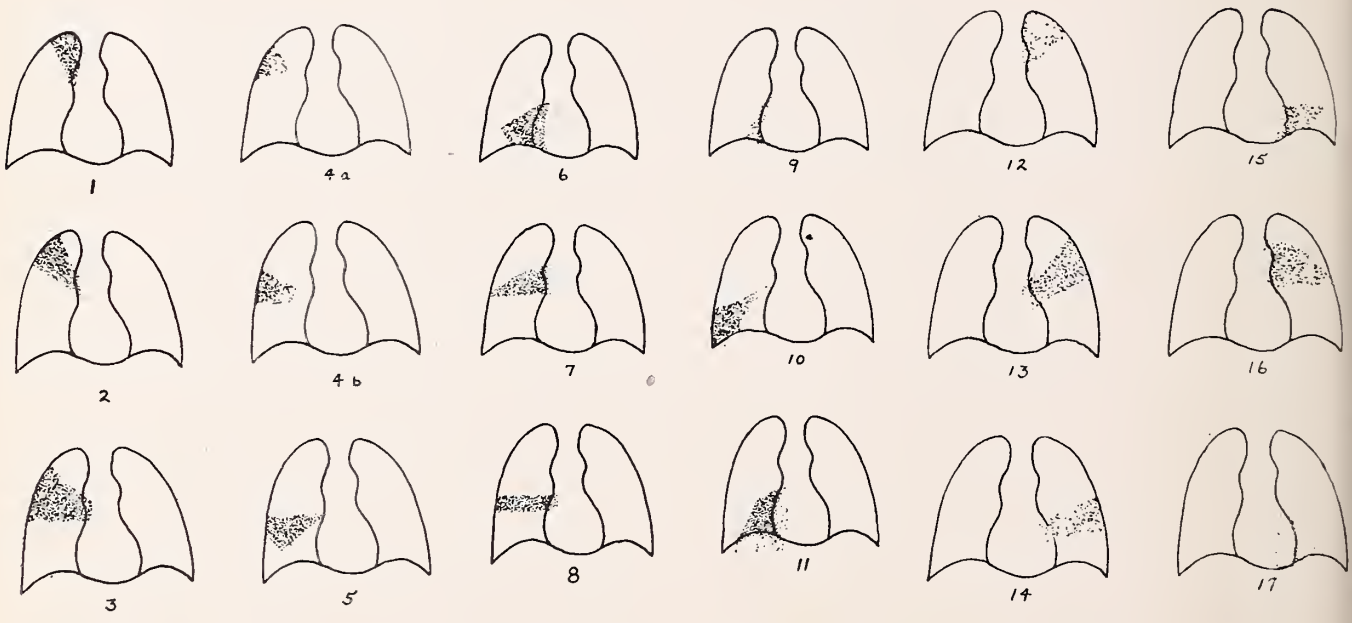


Fig. 2. Normal anatomic distribution of lobes and segments, showing density distribution when involved with diseases, on the posterior-anterior film of the chest. (1) Right upper lobe=RUL; (2) Right lower lobe=RLL; (3) Right middle lobe=RML; (4) Left upper lobe=LUL; (5) Left lower lobe=LLL; (6) Accessory lobes, (a) Azygos lobe, (b) Dévé's lobe, (c) Inferior accessory lobe. (*From* Kane, Irving J.: Radiol., 59:229-237, August, 1949.)



Figs. 3-5. Normal anatomic distribution of lobes and segments, showing density distribution when involved with disease, on the postero-anterior film of the chest. (1) Apical segment, RUL; (2) Posterior segment, RUL; (3) Anterior segment, RUL; (4a) Axillary portion of posterior segment, RUL; (4b) Axillary portion of anterior segment, RUL; (5) Lateral segment, RML; (6) Median segment, RML; (7) Apical (superior) segment, RLL; (8) Subapical segment, RLL; (9) Median basal segment, RLL; (10) Anterior and lateral basal segments, RLL; (11) Posterior basal segment, RLL; (12) Apical-posterior segment, LUL; (13) Anterior segment, LUL; (14) Superior segment (lingula), LUL; (15) Inferior segment (lingula), LUL; (16) Apical (superior) segment, LLL; (17) Posterior basal segment, LLL. (*From* Kane, Irving J.: Radiol., 59:229-237, August, 1952.)

Terminology

The Jackson-Huber[6] system of bronchopulmonary terminology is now widely accepted and used, and the refinements added by Boyden have made available a highly accurate and relatively simple basic standard for those interested in bronchial disease. The work of Brock[5] and diagrams of Kane[11] have given the roentgenologist reliable standards for recognizing the various segments of the normal lung in relationship to the thoracic wall as they appear on the roentgenograms. A working knowledge of these basic fundamentals is mandatory for localization, evaluation and description of bronchopulmonary disease, not only for the roentgenologist, but for the thoracic surgeon and the clinician as well.

The use of the Boyden numerical system of bronchial nomenclature at St. Mary's Hospital, Minneapolis, has been of definite value in standardizing the description of lesions. It provides a short, concise and accurate manner of describing the location and extent of disease in terms whose meaning is unmistakable. It serves as a common ground of understanding, a significant feature since several branches of medicine are usually involved in any one case (Fig. 1).

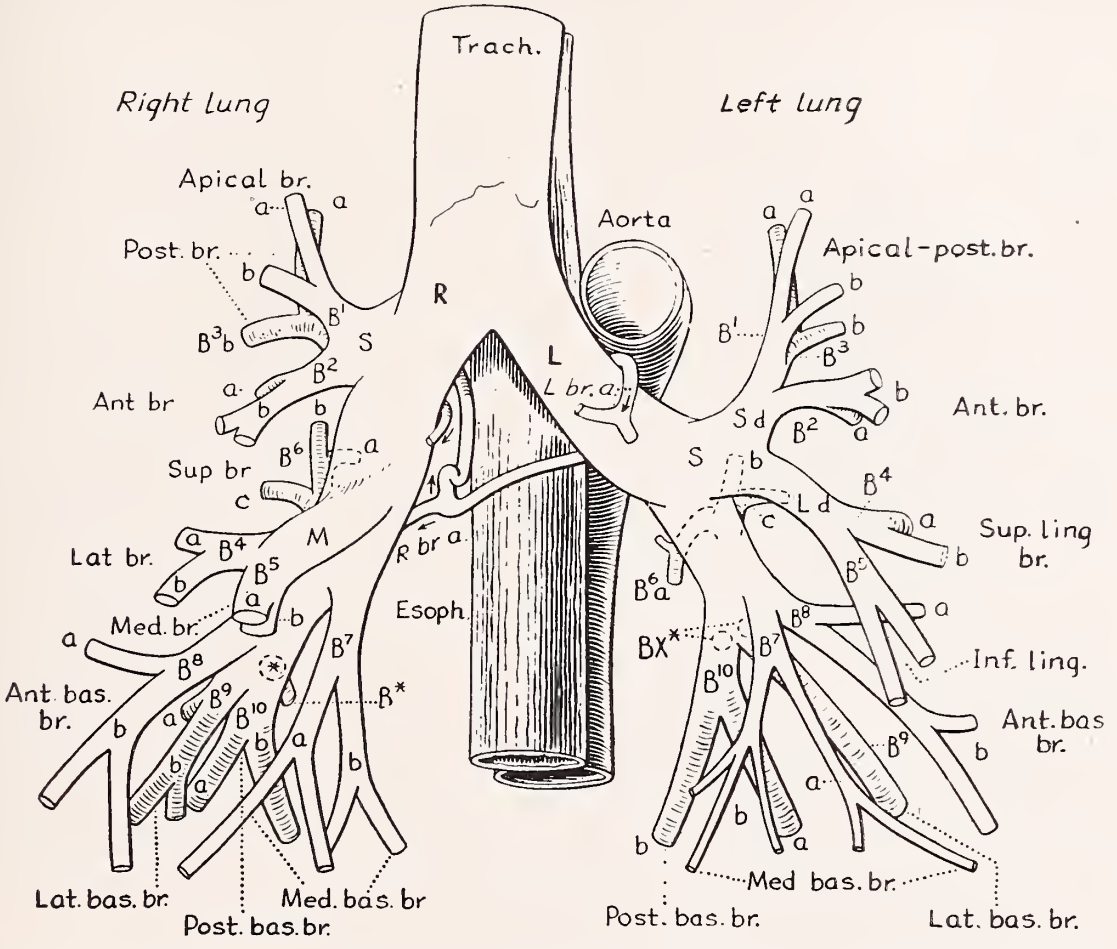


Fig. 6. Orthodox plan of prevailing bronchial pattern in hypothetical pair of lungs. (*From* Boyden, Edward A.: Dis. Chest, 15:6, June, 1949.)

Pulmonary Segmental Anatomy

The diagrams of Kane[5] are invaluable for demonstration of the various pulmonary segments and subsegments as they appear on the postero-anterior roentgenogram. They should be familiar to anyone who attempts interpretation of chest films. The density distribution of the lobes and segments is demonstrated in Figures 2 through 5. Ten segments are described in the right lung and eight in the left lung because of the common stem origin of the apical-posterior segment, and the assumed absence of a distinct median basal segment in the left lower. The relationship and effect of the various pulmonary segments on the margins

of the heart and aorta are of distinct value in localization of pulmonary densities from the single postero-anterior film examination. Segmental densities adjacent to a cardiac or aortic segment usually produce an indistinct margin, those behind or in front accentuate the overlapped margin. The pulment is to be thoroughly investigated, possibly by the addition of multiple spot films.

Bronchial Anatomy

Boyden's[1] studies have resulted in his publication of an orthodox plan of the bronchial tree based on

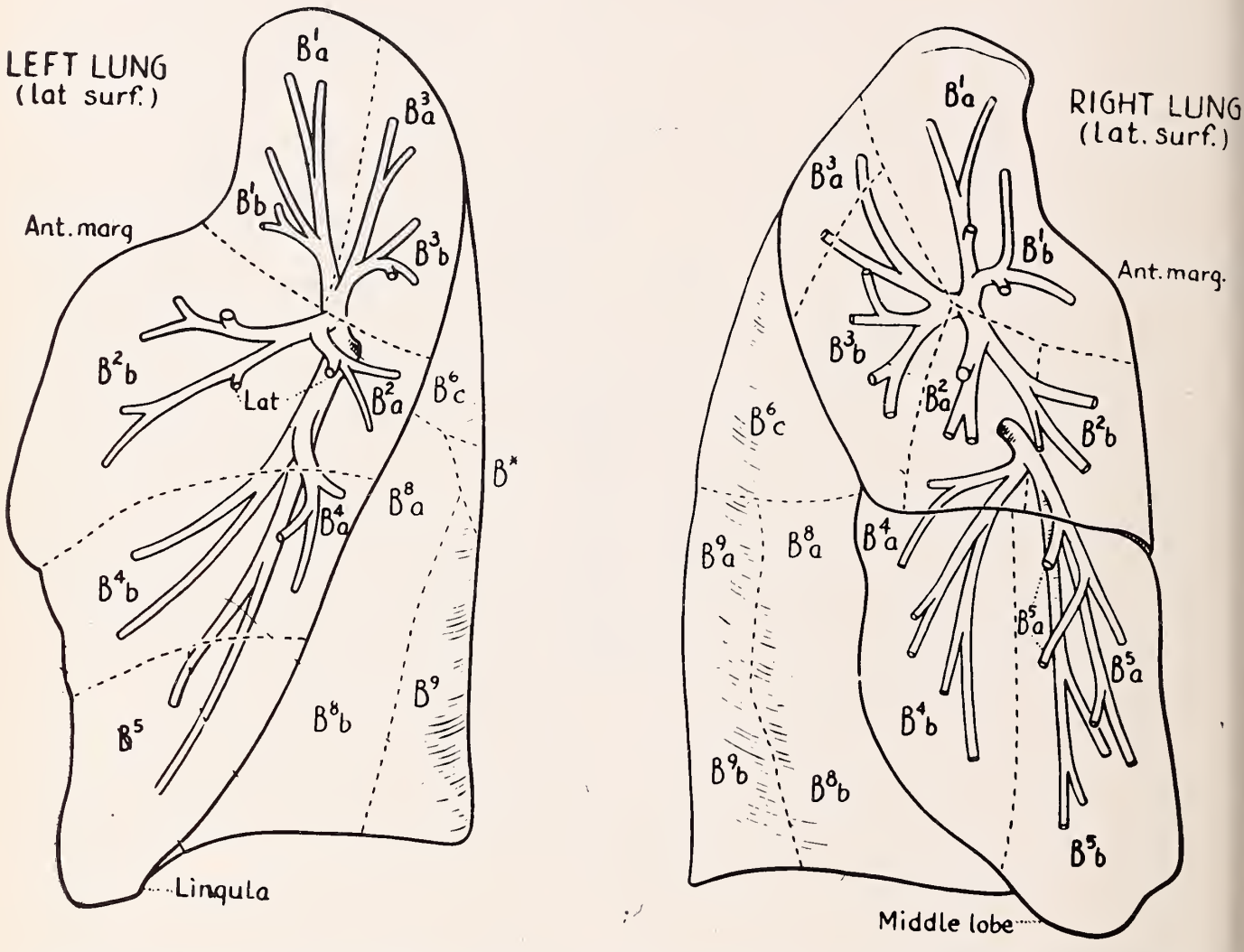


Fig. 7. Prevailing mode of branching of the right upper and middle lobes, and left upper lobe. (*From* Boyden, Edward A.: Dis. Chest, 15:6, June, 1949.)

monary segments are quite constant in size and shape, but variations occur and limitations in accurate localizations must be recognized. Relationships are altered by overlapping shadows as well as by emphysema, atelectasis, fibrosis, and by pleural and pericardial effusions. Lateral and oblique projections are, therefore, usually required for accurate localization and for determining the extent of a disease process. With multiple projections made preliminary to the bronchographic investigation, it is usually possible to predict which bronchial segment or subsegment is involved. Thus, the roentgenologist should know in advance which seg-

a hypothetical pair of lungs that combines the prevailing patterns of all the bronchial segments, as well as their projection onto the lung surfaces (Fig. 6). The prevailing bronchial distribution in both lungs, including the important subsegments, are demonstrated in greater detail and in oblique projections in Figure 7 (upper and middle lobes) and Figure 8 (lower lobes). A diaphragmatic view of the segmental distribution and the roentgenologically-important relationship of the segments to the heart is shown in Figure 9. Ten major branches are presented on each side, numbered one to ten, with the important subsegments identified by let-

ters "a" and "b". Further divisions of the subsegments receive numbers "1" and "2". Anatomic features and variations, based on Boyden's[1] analysis, significant to the roentgenologist, are:

Right Upper Lobe (B^{1-3}).—The main bronchus, which is eparterial in location, is very short, branching almost immediately directly opposite the carina. The short upper lobe bronchus adds to the hazard of right pneumonectomy. It is prevailingly trifurcate (46 per cent) with the first and highest branch as visualized on the postero-anterior bronchogram being the apical, next the posterior, and finally and lowermost, the anterior branch. The three main branches, apical (1), anterior (2), and posterior (3), are present, however, in only 38 per cent. The remainder consist of three bifurcate types and one quadrivial type. In 28 per cent of cases the anterior branch of the apical bronchus arises from the anterior bronchus (B^2). Hence, drainage from an apical lesion may take place through the bronchus of the anterior segment. The two subdivisions of the posterior branch (B^3) arise independently in 16 per cent of cases, thus producing a quadrivial pattern, or four segments in the lobe. The occurrence of an independent branch of (B^3) has often been considered an "axillary" branch.

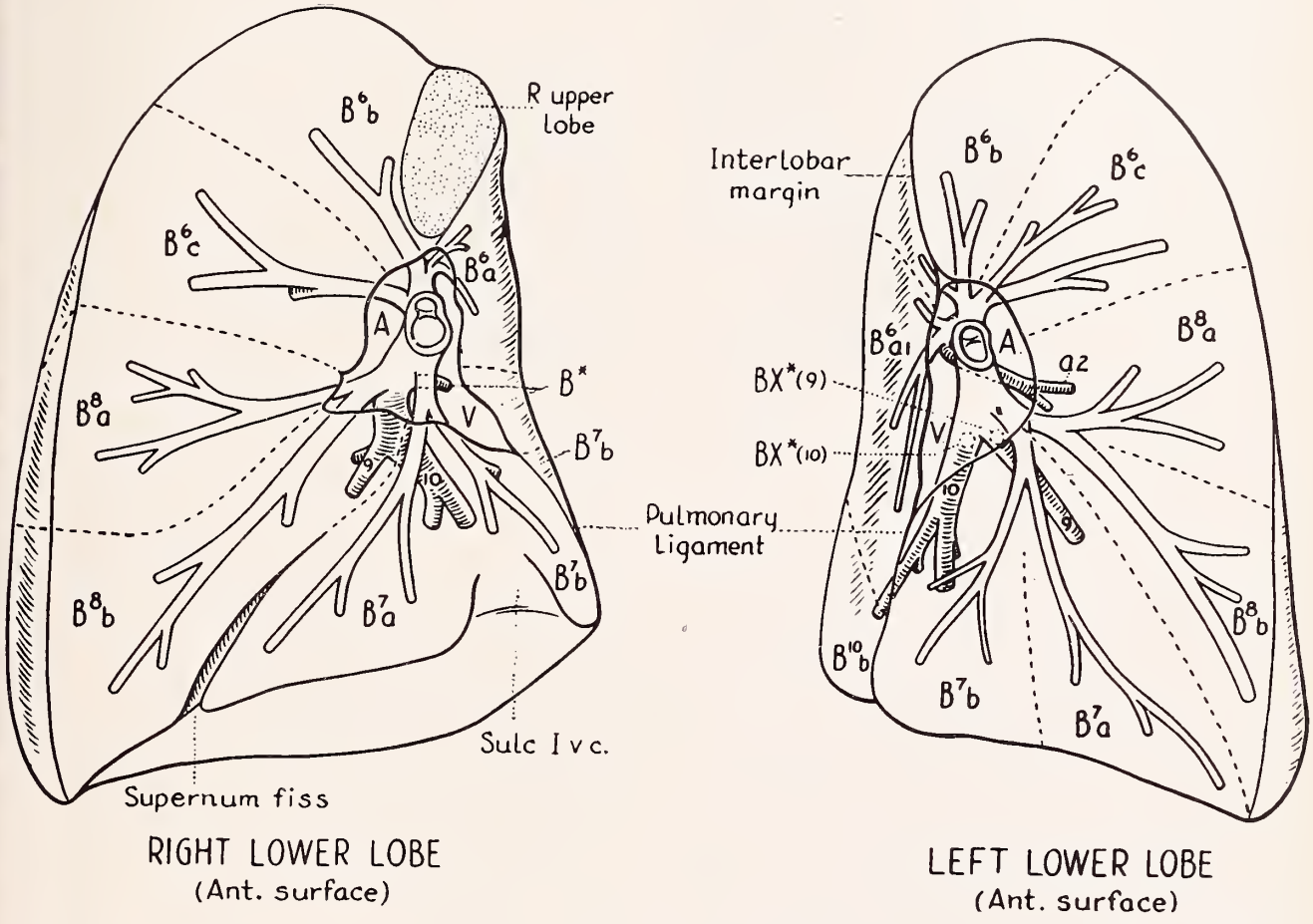


Fig. 8. Prevailing mode of branching of lower lobes. (*From* Boyden, Edward A.: Dis. Chest, 15:6, 1949.)

Middle Lobe Bronchus ($B^{4,5}$).—This bronchus descends obliquely forward and downward from the right primary bronchus. Its length averages 18 mm. and because of its length is susceptible to lymph node pressure. Lymph node pressure commonly occurs at a distance of 0.5 to 2 cm. below the take-off of this bronchus. In 62 per cent the main branches are the lateral (B^4) and medial (B^5). A superior-inferior relationship is present in 18 per cent. The plane between the medial and lateral segments is frequently crossed by large arteries (53 per cent).

Right Lower Lobe Bronchus (B^{6-10}).—The superior segment bronchus (B^6) arises postero-lateral to and very slightly below the middle lobe orifice.

It usually bifurcates (86 per cent) into a lateral branch (B^6c) and to a superior and medial branch B^6b and B^6a. The medial branch is small, resulting in a horizontal capping of the basal segment by the superior segment (62 per cent). The branching is quite different on the left, wherein the medial branch (B^6a) is large.

of B^8 or B^*. Major variations of the lower lobe bronchi are relatively infrequent.

Left Upper Lobe Bronchus ($B^{1+3 \text{ and } 2}$, $B^{4 \text{ and } 5}$). —These branches correspond to the right upper and middle lobe bronchi. Both branches originate from a single pedicle instead of as two separate

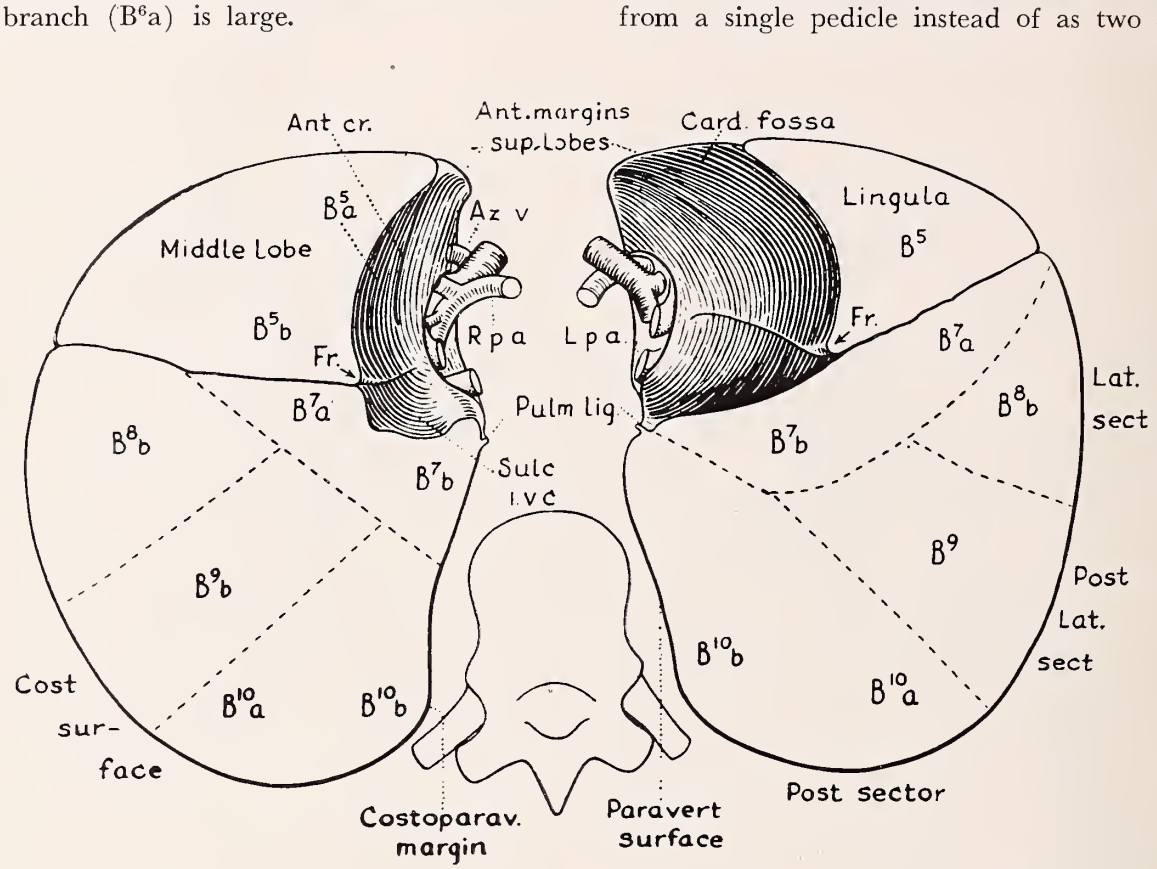


Fig. 9. Diaphragmatic view of the segmental distribution. (*From* Boyden, Edward A.: Dis. Chest, 15:6. June, 1949).

Fig. 10. See page 820.

A subsuperior bronchus (B^*), located dorsally a short distance below the superior bronchus, is present in 62 per cent of cases. This branch (B^*), or high branches of B^{10}, designated BX*, supply a constant transverse wedge of tissue lying between the superior segment and the basal segments. Because of its constancy (100 per cent), it has sometimes been considered an accessory segment. Both the superior and subsuperior bronchi, because of their posterior locations, are frequent sites of lung abscess and aspirated material. Four basal segments are present: B^7, the medial basal branch, has the highest take-off medially, at an average distance of 1 cm. below B^6; followed by B^8, the anterior segment anteriorly; B^9, the lateral segment; and, finally B^{10}, the posterior segment. The latter two have a common stem. B^7 is absent in 14 per cent of cases, its place being taken by branches

trunks, as on the right, and the branching is prevailingly bifurcate (73 per cent). The pedicle is relatively low on the main bronchus and its location is accordingly hyparterial. $B^{1 \text{ and } 3}$, the apical and posterior segments of the upper branch, have a common origin. In 27 per cent the division of the upper lobe is trifurcate, due to changes in size or location of the anterior segment of the upper branch (B^2). Splitting of the anterior branch (B^2) occurs in 33 per cent of cases. A frequent and important variation is the origin of the anterior branch of the apical segment from the bronchus of the anterior segment (38 per cent). Spread of apical disease to a large portion of the upper lobe is thus possible and (as on the right) drainage from the anterior segment may actually originate in the apex. The posterior ramus of the anterior upper lobe segment (B^2a) is absent in

35 per cent of cases, and it is replaced by a branch from the lingular segment in 12 per cent. This anomalous crossing of the fissure by the branch from the lingula is, therefore, an occasional anatomical hazard in linguelectomy. A deep upper lobe cleft produces a "middle" lobe in 8 per cent of cases. The branches of the lingular segment are practically always superior and inferior in location (85 per cent), instead of lateral and medial as on the right. A lateral-medial pattern is present, however, in 15 per cent of cases. B^3b, the important posterior ramus of the posterior upper lobe segment, sometimes called the "axillary" branch, is displaced downwardly in 48 per cent of cases. B^2a and B^3b are frequent sites of lung abscess on either side. Unusual development of these subsegmental bronchi has led to some confusion in nomenclature in regard to separate "axillary" branches.

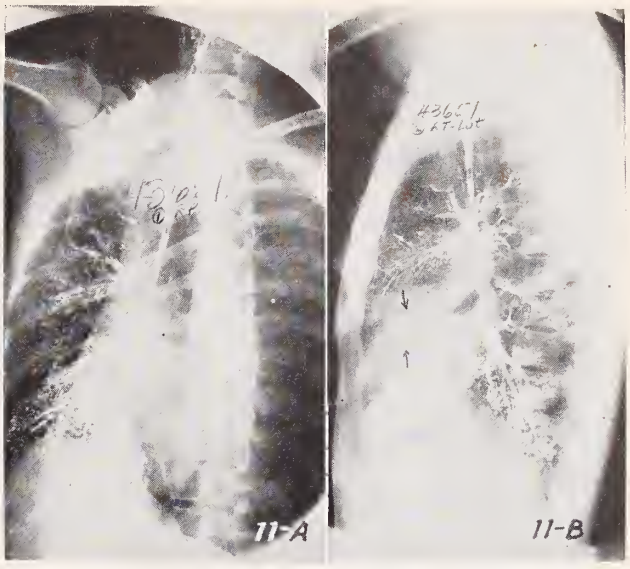


Fig. 11. Case No. 43651. (a) Right posterior oblique and (b) right lateral views. Localized middle lobe atelectasis and bronchiectasis visible in lateral, but not in oblique view. The value of multiple views indicated.

Left Lower Lobe ($B^{6\text{-}10}$).—The lower lobe bronchus arises 5 cm. below the carina, but because of the obliquity of the left main bronchus the point of origin is slightly higher than on the right. Incidentally, the oblique position of the left main bronchus produces a definite difference in the angulation of the two main bronchi from the midline as measured at the carina. The average normal angle is approximately 30 degrees on the right, 45 degrees on the left (personal observation). This is a valuable index since shift of the bronchi incident to atelectasis of the lower lobes changes the normal angle relationships. B^6, the superior segment orifice, is located posteriorly 10 to 12 mm. below the origin of the upper lobe bronchus. The common stem of the lower lobe is, therefore, short but slightly longer than on the right. B^6 bifurcates in 85 per cent of cases, with the formula B^6a (medial) and B^6 (b and c) (superior and lateral) in 43 per cent. The medial ramus of the superior segment (B^6a) is much larger than on the right and extends two-thirds or more of the distance to the diaphragm in 57 per cent of specimens. This produces an oblique capping of the lower lobe by the superior segment in 89 per cent of cases. This capping is prevailingly horizontal on the right (62 per cent). A distinct subsuperior branch is present in only 29 per cent on the left (62 per cent on the right). Its position is often supplied by high branches of the lateral and posterior basal branches. The basal segments most commonly bifurcate (87 per cent) from the basal trunk, and the pattern of $B^{7 \text{ and } 8}$, and $B^{9 \text{ and } 10}$, is the most common (67 per cent). B^7, the median basal branch, is shifted laterally as compared to the right side and together with B^8 arises at an average distance of 17 mm. below B^6. In 10 per cent of cases, B^7 arises independently as on the right. $B^{8 \text{ and } 9}$ show no significant variations, but B^{10} supplies the median paravertebral area of B^7b.

Bronchography

Knowledge of the anatomy of the normal bronchial tree and of its significant variations is an absolute prerequisite to an intelligent analysis of the bronchogram. All ten segmental branches must be visualized and counted off, with subsegmental and smaller peripheral branch filling highly desirable. Only in this way can each branch be identified, the position and relationship of the various segments to the thoracic wall ascertained, and, the presence of disease processes and the extent of involvement established. Plain films, including lateral and oblique projections, are notably inadequate for this purpose. Predilection of certain disease processes for specific branches, notably lung abscess and aspiration disease in B^6, B^*, B^{10}, and B^2a, and B^3b, tuberculosis in $B^{1 \text{ and } 3}$, and inflammatory or tuberculous lymph node compression of the stem bronchus in localized middle lobe atelectasis, $B^{4 \text{ and } 5}$, make identification of the bronchus involved an aid in diagnosis.

Since segmental resection is now commonly undertaken, it is obvious that the thoracic surgeon

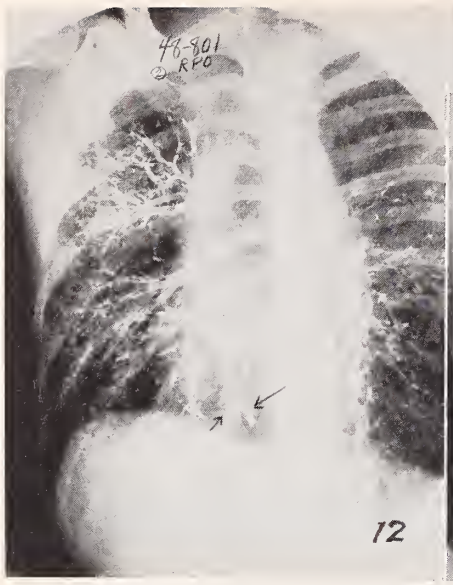


Fig. 12. Case No. 48,801. Right posterior oblique view. Typical localized bronchiectasis, B^{10}. Note that B^5, the medial branch of the middle lobe, is not involved. This is of surgical significance.

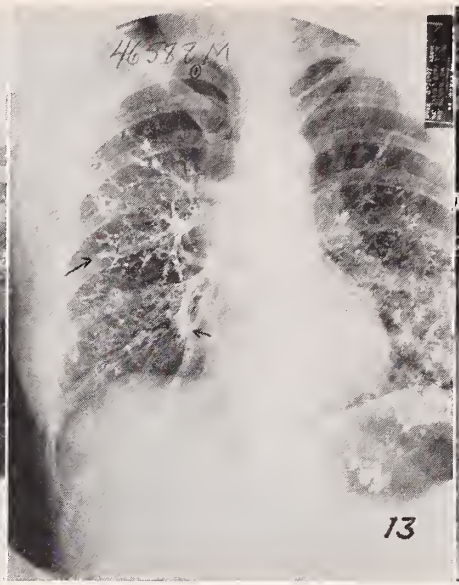


Fig. 13. Case No. 46588. Postero-anterior view. Bronchiectasis and atelectasis in B^5, the medial segment of the middle lobe, and minimal involvement in B^2b, the anterior ramus of the anterior branch of the upper lobe. The importance of recognizing multiple lobe involvement is demonstrated.

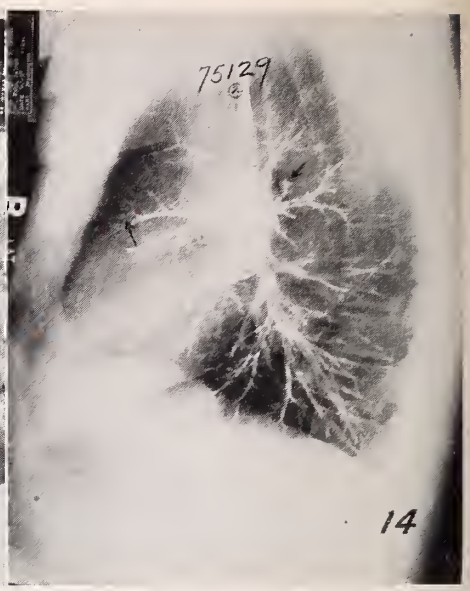


Fig. 14. Case No. 75129. Right lateral view. Very minimal localized bronchopulmonary inflammatory process (bronchiectasis?) in B^3b and B^2b —subsegmental branches of the anterior and posterior bronchi of the upper lobe.

must know in advance the exact segment or segments involved as well as the position in the thorax. Proper and efficient drainage of lung lesions is likewise facilitated by knowledge of their position in the thorax. Shift in position of bronchial branches, commonly the result of obstructive, atelectatic or fibrotic infiltrative processes, is highly significant from the diagnostic and surgical viewpoint. Multiple segment involvement is occasionally of diagnostic significance. Lesions involving, for example, both lateral (axillary) branches of the upper lobe, which originate from separate segmental bronchi, are not likely to be due to a single bronchus lesion (carcinoma). Identification of the involved bronchi, and the location and extent of the disease process, is accordingly of great diagnostic and surgical importance, and this information is obtainable only by complete bronchial mapping. Ascertaining the nature of the disease processes is greatly facilitated by the bronchogram in the following conditions. The chief roentgen signs very briefly stated are as follows:

Emphysema, local or generalized, usually produces a narrowed bronchial lumen with often filling of the terminal alveoli, somewhat suggesting a bud on a narrow stem.

Asthma produces a sharp, squared, cut-off of the peripheral branches due to mucous plugs. Unsuspected local areas of bronchiectasis are often disclosed in asthmatic patients, according to Overholt.[17] This observation has been confirmed in our series.



Fig. 15. Case No. 83514. (a) Right postero-anterior and (b) right lateral, with Dionosil (aqueous). Early "middle lobe syndrome." Typical location of lymph node compression B^{4-5} (central arrow).

Diffuse bronchospasm is indicated by lack of filling of the peripheral branches.

Chronic bronchitis produces widened bronchi with often irregular, serrated margins, due appar-

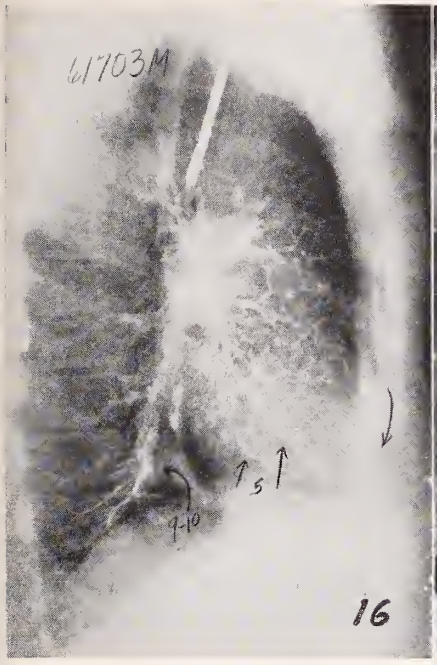


Fig. 16. Case No. 61703. Left lateral bronchiectasis in left basilar posterior and lateral branches, B^9 and B^{10}, with involvement also present in the inferior lingular branch B^5—a common type of multiple segment involvement. Note marked downward displacement of the inferior lingular branch, and rotation anteriorly of the other upper lobe branches (arrow).



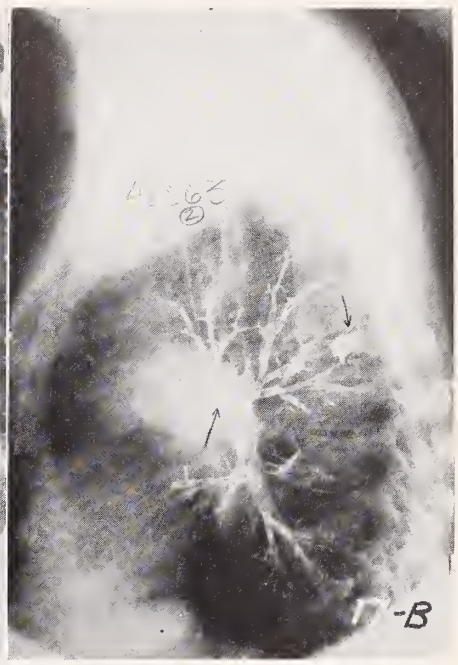


Fig. 17. Case No. 48663. (a) Postero-anterior and (b) right lateral.[2] Typical bronchiogenic carcinoma in a common location, B^2, the anterior bronchus of the upper lobe. The defect is also characteristic. Also note localized infectious process (alveolar filling) in B^3b, the posterior ramus of the posterior bronchus of the upper lobe.

ently to enlarged bronchial glands, the result of cystic degeneration, according to Duprez.[18]

Bronchiectasis produces widening of the lumen as well as saccular dilatations. Involvement is usually in multiple segments, rarely involving an entire lobe, and bilateral involvement occurs in about 30 per cent of cases. The lingular segment is involved in 60 per cent of cases of primary left basilar disease, and the right middle lobe in 45 per cent of cases of primary basilar disease, according to Overholt.[19] Very minimal localized involvement in an unsuspected location, completely eluding other methods of detection, is a fairly common occurrence. Detection of these small but important lesions is possible only with complete five-lobe filling or full mapping of the entire bronchial tree.

Atelectasis, almost always associated with bronchiectasis, or bronchial obstruction, produces compact grouping of the branches, with decrease in size of the segments involved and change in position of the involved branches with secondary shift of the adjacent bronchial segments. Displacement or rotation of bronchial branches is often a striking feature of this process, necessitating review of the entire tree on the side involved from the standpoint of the number of branches visible, and their position in the thorax. A shifted bronchus may overlap an area of bronchial block, and the absence of filling of one branch becomes obvious when the number of branches visible is reduced.

Lung abscess, often not localized, or single and frequently associated with bronchiectasis, produces large local accumulations of contrast material, with or without fluid levels. B^6, B^{10}, B^*, and B^2a and B^3b are frequent locations.

Recent inflammatory lesions (pneumonitis) frequently result in an unusual degree of alveolar filling, confined to the segment or segments involved by the disease process.

Bronchial adenoma typically produces a smooth, rounded defect, usually in the proximal portion of the bronchial tree with secondary atelectasis distal to the lesion.

In our experience, the defect of *bronchiogenic carcinoma is* usually short and cone-shaped, occasionally irregular. A positive diagnosis of bronchiogenic carcinoma based solely on the appearance of the defect is not justifiable, however. Chronic granulomata, oil pneumonitis and silicosis may produce defects closely simulating the type of lesion seen in bronchiogenic carcinoma. In general, however, granulomatous lesions are more irregular

and more extensive than the defects of bronchiogenic carcinoma. A diagnostic sign highly suggestive of *alveolar cell carcinoma* has been described. Narrow, rigid, uniformly distributed, filled rather than coated bronchi, with absence of terminal filling are the main features, according to Zheutelin, Lasser and Rigler.[20]

Thus, the presence of disease which may not be demonstrable by other means, its location and its extent, can be very precisely determined by good bronchographic studies, and the nature of the disease very frequently indicated with certainty.

Technique of Bronchography

We are convinced that bronchography is a team procedure, requiring the services of the clinician, who should select the patient, the anesthesiologist, whose services should always be immediately available, as well as that of the bronchoscopist and the roentgenologist and his staff of especially-trained technicians. General anesthesia is best employed in children. Proper and judicious preliminary explanation of the procedure to the patient by the clinician and bronchoscopist frequently allays fear, apprehension and emotional distress, which in turn produces a calm and co-operative patient, a factor very important in obtaining technically good bronchograms. Postero-anterior and lateral films of the chest previous to bronchoscopy are recommended. After preliminary general sedation and local preparation and anesthesia of the throat and trachea by the bronchoscopist, followed by bronchoscopic investigation, and aspiration of secretions, a catheter is placed in the trachea. The patient is then brought to the fluoroscopic room where the roentgenologist indicates the proper position of the catheter tip for each pulmonary segment. Proper rotation of the patient on the table during fluoroscopy is essential for complete filling of each segment. Every segment from B^1 to B^{10} must be supplied with contrast material so that, in the absence of obstruction, filling will be obtained. Spot films are usually made if any one segment fails to fill properly. Lipiodol® or Dionosil,® oily or aqueous, are the preferred contrast media. Lipiodol® is iodized poppy seed oil; Dionosil®, aqueous, is a 50 per cent suspension of propyliodine combined with sodium carboxymethyl cellulose, sodium chloride and benzyl alcohol. Dionosil®, oily, is 60 per cent concentration in arachis oil. Chronic granulomas have been reported following iodized oil studies, according to Storrs[21] and Belton,[22] but not with Dionosil®. A greater tendency to alveolar filling is noted with Lipiodol®, which is often retained for months. Temperature elevations after administration of Dionosil® occur, according to Norris,[14] and this observation has been confirmed in our studies. The rapid and almost complete elimination of Dionosil® from the bronchial tree is a very desirable feature.

Filling of both the right and left bronchial trees may be done at one examination, provided the clinician agrees and the condition of the patient at the time of study warrants a complete investigation, although a unilateral study is probably the procedure of choice. Film studies, using high kilovoltage Bucky technique, follow immediately. Routine projections are the recumbent lateral, posterior oblique, opposite anterior oblique, and, finally, the posterior-anterior film made upright. The delayed bronchogram made at an interval of thirty minutes to one hour is sometimes employed, especially if there is poor peripheral filling in certain areas of suspected bronchiectasis. It may demonstrate bronchiectasis not shown initially.[23,24]

Figures 10 through 17 are representative bronchograms of conditions commonly encountered in private hospital practice. A thorough examination requires complete mapping of the ten segmental branches and their subsegments, multiple projections, and film studies of high technical excellence.

Conclusions

1. The Jackson-Huber system of bronchial nomenclature with Boyden's additions is a widely-accepted, simplified, and accurate plan for anatomic description of the bronchopulmonary segments and bronchial tree for usage by the clinician, bronchoscopist, pathologist, roentgenologist and surgeon, and all physicians interested in chest disease.

2. Familiarity with the appearance and location of pulmonary segmental densities in the plain film, and with the normal pattern of the bronchial tree and its variations as shown by bronchograms, is a basic fundamental for interpretation and evaluation of bronchopulmonary disease.

3. A proper bronchographic study, which requires complete mapping of the entire bronchial tree, establishes the presence, extent, and often the nature of bronchial disease and permits its accurate description and localization.

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(References are on Page 873)

Treatment of the Child Having Asthma

"All is not asthma that wheezes." With this aphorism in mind, the author delves into the differential diagnosis of conditions that may simulate asthma in a child. He emphasizes that the physician must treat the child having asthma, not just asthma in a child. A number of the older medicaments still play important roles in the management of acute allergic reactions in childhood.

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ASTHMA may be present in children of all ages. Its occurrence in infants has been particularly emphasized by Buffum.[1] Asthma affects a sufficient number of the patients in a general or pediatric practice to warrant a periodic review of management. The title of this paper has been selected specifically to emphasize the importance of individualization of treatment, thus emphasizing that one treats a child having asthma, not just asthma in a child.

Two relevant aphorisms have existed for some time. The first is "All is not asthma that wheezes,"[2] and the second is "All that wheezes is asthma,"[3] or its modification, "All that wheezes is asthma until proved otherwise." It makes little difference which one of these is remembered as long as one keeps in mind that asthma is not the only condition which produces wheezing dyspnea but that it is the most important one in childhood.

Read at the Clinical Reviews sponsored by the Mayo Clinic and the Mayo Foundation, Rochester, Minnesota, April 14 to 16, 1958.

From the Section of Pediatrics, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.
The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

Differential Diagnosis of Asthma in Children

The syndrome of wheezing dyspnea, which is referred to as asthma, is caused by an acute allergic reaction, but it is simulated clinically by a number of other conditions that produce narrowing of the airway. Those which must be considered in the differential diagnosis in children are somewhat different from those in the adult (Table I).

A "rattle" in the throat due to an excess of saliva or mucus occasionally is met with in a

TABLE I. CONDITIONS THAT MAY SIMULATE ASTHMA IN CHILDREN

"Rattle" in throat due to excess saliva or mucus
Acute laryngotracheobronchitis
Acute bronchiolitis
Foreign body in bronchial tree
Bronchiectasis
Cystic fibrosis of pancreas
Lymphadenopathy, most common at bifurcation of trachea
Mediastinal tumor (including Hodgkin's disease)
Anomaly of great vessels at base of heart
Relaxed larynx
Retropharyngeal abscess
Pertussis
Dust bronchitis
Sighing dyspnea

small infant and sometimes has been mistakenly construed as asthma. Actually, it may represent at times a sign of infantile asthma.[4] Acute laryngotracheal bronchitis sometimes is confused with asthma because of the degree of dyspnea. However, the dyspnea in this condition almost invariably is entirely inspiratory. The dyspnea of acute bronchiolitis is also chiefly inspiratory. Infants so affected are usually rather ill and have fever and a cough rather than a wheeze. Auscultation reveals many fine inspiratory rales but no wheezing rales.

The presence of a foreign body in some part of the tracheobronchial tree often causes wheezing. An asthmatoid wheeze, as originally described by Jackson,[5] frequently is evident if the foreign body is in the trachea or a main bronchus. The thick secretions associated with bronchiectasis often may narrow the airway and so simulate asthma. The pulmonary infection that is an integral part of the syndrome of cystic fibrosis of the pancreas may produce a bronchiectatic condition that in turn has been confused with asthma. One occasionally encounters a child having true allergic asthma and also cystic fibrosis.

The three conditions of mediastinal lymphadenopathy, mediastinal tumor and anomalies of the great vessels at the base of the heart may produce enough external pressure to encroach on the airway of the trachea or one of the main bronchi.

A relaxed larynx occurs only in early infancy. The stridor and difficulty in breathing are inspiratory. Retropharyngeal abscess is now seen only rarely. It produces narrowing of the airway above the larynx.

Pertussis causes cough but not wheezing, although children having asthma may have a persistent cough. Bronchitis resulting from dust[6] was described originally in the so-called dust bowl in the southwestern part of the United States a number of years ago. This possibility does not have to be considered unless one knows that the child has been exposed to a great deal of dust or finely divided particles of some sort in the inspired air. Sighing dyspnea[6] is a functional condition that bears no real resemblance to asthma.

Pathologic Aspects

Asthma of allergic origin is caused by narrowing of the airway produced in three ways, namely (1) edema of the mucous membrane, (2) spasm of the bronchial musculature and (3) thick mucus (Table II). It is evident that asphyxia is the result of obstruction of the airway due to the presence of mucous plugs or thick secretions or in some instances due to severe edema of the larynx and tracheobronchial tree. Dehydration occurs when the child is unable to ingest sufficient fluids to supply not only the usual needs but the additional amount needed to replace the excessive amount lost through rapid breathing. Anxiety is frequently encountered not only in the child having asthma but also in his parents. Increasing anxiety on the part of one often increases the anxiety of the other.

TABLE II. PERTINENT PATHOLOGIC AND PATHOLOGIC PHYSIOLOGIC CHANGES IN CHILDREN HAVING ASTHMA

Edema of submucosa of tracheobronchial tree
Spasm of intrinsic bronchial musculature
Hypertrophy of smooth muscle
Secretion of thick tenacious bronchial mucus
Eosinophilia (bronchi and blood)
Asphyxia
Mucous plugs
Edema of larynx and tracheobronchial tree
Dehydration
Emotional unrest (anxiety)

Investigators formerly thought they knew why eosinophilia occurred. At the present time, no one is sure about its mechanism. It now appears that the human eosinophil is not particularly rich in histamine. The basophil in the blood and the mast cell in the tissue are known to contain the greatest quantity of histamine.[7,8]

Mechanism of Acute Allergic Reaction

The mechanism of the acute allergic reaction in a sensitized person may be considered to consist of four parts, namely (1) the entrance of antigen into the body, (2) the antigen-antibody (reagin) reaction in or on the sensitized cell,

(3) the release of histamine and other chemical mediators and (4) the assault of these chemical mediators on the smooth muscle and blood vessels of the shock organs.

TABLE III. IMMEDIATE ALLERGIC REACTIONS: SOME SUBSTANCES RELEASED BY THE ANTIGEN-ANTIBODY REACTION

Substance	Dilates Small Vessels	Constricts Bronchi	Decreases Coagulability of Blood
Histamine	+	+	0
Acetylcholine	+	+	0
Serotonin (5-hydroxytryptamine)	Constricts	+	0
Slow-reacting substance	0	+	0
Heparin	0	0	+

All of the substances that are released and that act as chemical mediators of the acute reaction are not yet known; however, at least five have been recognized (Table III). Some species difference apparently occurs with regard to the importance of each of these chemical mediators. Histamine is of great importance in man,[9] as is the slow-reacting substance.[10] Considerable question exists regarding the importance of serotonin in the human reaction,[11] whereas this substance is important in the rat and other animals. Acetylcholine may be important in some of the allergic reactions of man.[12] Heparin is known to account for the change in the coagulability of the blood.[13] The slow-reacting substance is probably more important in man than in any of the experimental animals. It has not yet been completely identified chemically. In addition to the substances mentioned, excessive amounts of potassium and adenosine also are probably released.

Management of Acute Asthma

The child having asthma is more effectively managed if one knows the pharmacologic action of each drug employed and which step of the acute allergic reaction is affected by the therapeutic measures used, which raises the question of how to block the afore-mentioned four steps of the acute allergic reaction. The first step can be blocked by using environmental control, which allows one to block the entrance into the body of all or a considerable portion of the antigen. A series of injections for hyposensitization partially blocks step 2. This form of treatment causes the child to produce blocking antibodies that interfere with the antigen-antibody (reagin) reaction. Treatment cannot affect step 3, for release of the chemical mediators takes place immediately once the antigen-reagin reaction has occurred.

The fourth step can be influenced by the various forms of symptomatic treatment familiar to all physicians. The drugs presently used for the symptomatic treatment of asthma are little different from those in general use about ten years ago (Table IV). It is true that some new antihistaminic drugs now are available, as are the steroids and corticotropin (ACTH). The "old" drugs, however, are still extremely effective if properly used.

TABLE IV. CURRENTLY ACCEPTED MODES OF ACTION OF DRUGS COMMONLY USED IN ASTHMA

Drug	Action
Epinephrine	Reduces edema Diminishes bronchospasm
Ephedrine	Same as epinephrine but slower in action and effect more sustained
Isopropylarterenol	Is most potent bronchodilator now known
Theophylline group	Are bronchodilators by direct action on muscle
Iodides	Thin bronchial secretion
Antihistaminics	Antagonize union of histamine with site of action
ACTH and steroids	Incompletely known but at least: Interfere with metabolism of histamine May interfere with formation of antibody Have antiphlogistic action (probably most important)

Epinephrine remains the most important drug in the treatment of the acute asthmatic episode. Depending on the severity of the attack, it may be given subcutaneously in a 1:1000 aqueous solution or in a 1:100 solution by inhalation. A small dose of the 1:1000 aqueous solution, such as 0.1 to 0.2 ml., should be given subcutaneously and repeated at intervals of fifteen to twenty minutes for two or three doses rather than administering the entire dose at one time. Other chemically related drugs, such as isopropylarterenol, isoproterenol (isuprel) hydrochloride and isoproterenol (norisodrine) sulfate, also may be used by inhalation. Isopropylarterenol is usually well tolerated by children and is considered the most potent bronchodilator now available. If nebulized medicaments are to be used, both parent and child should practice the technique. Ephedrine and the

ephedrinelike drugs are of some value but their action is somewhat more delayed, although more prolonged. I consider that epinephrine in oil is too uncertain in action to warrant using it, although some physicians consider that it is an excellent preparation.

Theophylline may be given by suppository or orally, or the ethylenediamine salt (aminophylline) may be given intravenously, orally or by suppository. A frequently effective combination is to administer the suppository when the first injection of epinephrine is given. The effect of the suppository will begin to be evident at about the time the effect of the epinephrine is wearing off. Some physicians are of the opinion that the theophylline group of drugs are of little therapeutic value against asthma when given orally. A seriously ill child having asthma may be too ill to take or retain medicaments given by mouth. If oral medication is tolerated, I have found that the oral route often is satisfactory if the asthma is not severe. Caution must be exercised regarding overdosage with aminophylline.[14,15] The slow and at times erratic absorption from the rectum should be remembered. If the drug is going to be effective in an acute attack of asthma, one or two doses will suffice. A suggested dose by rectum is 250 mg. for a child of ten years and 125 mg. for a child of two years. When the drug is used intravenously, a dose of 6 mg. per kilogram is adequate. The drug should be injected slowly and should be well diluted in a solution of dextrose.

Potassium iodide is an excellent expectorant but will not produce its effect immediately when given at the time of an acute allergic attack.

The antihistaminic drugs are of minimal value in the treatment of asthma. When given prophylactically before or immediately after exposure to a known etiologic agent, they are often of great benefit. If used early in the course of the attack, they also are of value. If the attack is well established, it is best to avoid their use.

The steroids and ACTH are of value in the treatment of patients who do not respond to the above regimen. In my opinion, these agents should not be used unless absolutely necessary. Their effect is not apparent for several hours, sometimes as long as twenty-four to forty-eight hours. Prednisone, prednisolone or triamcinolone (aristocort or kenacort) may be given orally. Cortisone, hydrocortisone or ACTH may be given intramuscularly. If past experience has demonstrated the necessity of the use of one of the steroids to stop an attack, its administration is best given concomitantly with epinephrine, but not in the same syringe. Every child who has once required the use of steroids, however, will not always require their administration to stop a subsequent attack of asthma. When these agents are used, adequate doses should be given to secure a prompt therapeutic effect and then the drug should be withdrawn over a period of five to ten days.

It is important that an adequate intake of fluid be maintained, particularly in the child whose severe acute attack is prolonged. The fluid often must be given intravenously. Inhalation of oxygen sometimes is of help, although the relative freedom from dust and pollen in an oxygen tent may account for some of the improvement that patients obtain when so treated. A mixture of helium and oxygen administered by mask occasionally is of great benefit. On rare occasions, inspissated mucus may act as a foreign body and have to be removed bronchoscopically.

Management of Recurrent Asthma

Children having recurrent episodes of asthma are managed differently. The initial emphasis in such patients must be on a complete diagnostic study. This, of course, is equally important in the management of the child having acute asthma after the attack has subsided. Such an investigation is best done by a physician especially interested and trained in pediatric allergy. Regular care and management are best given either by him or by the physician in the home community (generalist or pediatrician) who best knows the child as a family physician. Close co-operation between the two physicians is essential.

Space does not permit more than some rather broad statements about management. Details of care vary from child to child. Environmental control is most important, as has been mentioned previously. House dust is a frequently noted etiologic agent. A "dust poor" bedroom can be established. When one advises this measure, be sure to see that the mother first dustproofs the bed and does a thorough and meticulous job.[16]

Infections may be etiologic factors, at least as cofactors. A complete examination should include careful study of the upper part of the respiratory tract, including culture of the naso-

pharynx. Culture of the sputum should be done if possible, although few children less than eight years of age can expectorate sufficiently well to provide a specimen.

Hyposensitization may be necessary but is more often of value for seasonal asthma. Hyposensitization to house dust is not recommended, for instance, unless a program of environmental control has been well carried out and has not succeeded completely in relieving the patient, or unless such a program is impossible.

Until the recurrent attacks are under control, the child should avoid exertion. He also should avoid sudden changes in temperature and exposure to dusty atmospheres. If attacks occur despite these measures, symptomatic treatment should be instituted at the very first sign that an attack is impending. The mother often will be able to tell anywhere from six to forty-eight hours in advance that an attack of asthma is going to occur. If the administration of potassium iodide, an antihistaminic drug, and ephedrine or an ephedrinelike drug is begun at this time, the asthmatic attack frequently can be averted. If infection appears to be playing a role, a properly chosen antibiotic should be administered at the same time.

Comment and Summary

A child having wheezing dyspnea (asthma) may be suffering from one of several conditions, although the most common cause is allergy. Knowledge concerning the mechanism of the immediate allergic reaction is constantly increasing, although much is still to be learned. Such knowledge allows the physician to treat a child having asthma on a much more rational basis.

Children whose asthmatic attacks are associated with infections should have the infection properly treated. Environmental control is an extremely important part of the management of the child having recurrent episodes of asthma; when such control is indicated, it should be carried out meticulously.

Most of the drugs now being used for symptomatic treatment are not new. The administration of steroids is not indicated unless use of other drugs has failed or unless one knows from previous episodes that these other agents always have failed. The steroids are not a substitute for other forms of treatment.

It is important to know the pharmacologic action of the drugs commonly used in asthma. Drugs should be given for the purpose for which they were devised, in adequate dose and at the proper time.

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DIABETIC KETOACIDOSIS AND/OR COMA CHART
(MODIFIED FROM WILDER)

Date and Hour	Time Since Admission	URINE				BLOOD							Insulin Kind and Dose	FLUID		B.P.	Remarks
		Vol. C.C.	Sugar	Acetone	Diacetic	Sugar	Ketones	CO_2	Urea	K	Cl	Na		Intake I-V and Orally	Output Urine Emesis		

Present-day Therapy of Diabetic Ketoacidosis and Coma in General Practice

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WHILE it is trite to state that the best treatment of most diseases is their prevention, it is axiomatic when speaking of diabetic ketoacidosis and coma. Diabetic coma may be dogmatically characterized as totally preventable in all known cases of the disease except in rare inescapable situations, an example of which might be a patient isolated from civilization through some catastrophe such as an airplane crash or shipwreck, finding himself without insulin for several days. If coma occurs otherwise, it may be considered to be the fault of the patient, the physician, or both. Three basic measures can be said to provide almost certain prevention of diabetic coma:

1. Create keen awareness of the gravity of this condition in the patient.

2. The patient must test every urine specimen showing 4 plus sugar for acetone* and if the latter persists more than twelve hours, the physician should be called. Do not await the onset of signs and symptoms.

3. No insulin-taking diabetic is allowed to test his urine less than twice daily.

Since the word "coma" is defined† as "an abnormal state of depressed responsiveness, with absence of adaptive response to tactile, thermal, proprioceptive, visual, auditory, olfactory, or verbal stimuli," the term diabetic coma should, in our opinion, be restricted to the state of virtual unconsciousness accompanying the more severe grades of diabetic ketoacidosis. However, the Joslin group classifies any case of diabetic acidosis as one of diabetic coma if the carbon dioxide combining power is 20 volumes per cent (9 mEq./liter) or less, and this arbitrary definition is purposely devised because "it has the advantage of affording an accurate way of putting into one group a series of cases for future study and comparision."[1] This definition, of course, ignores the clinical fact that therapy of the unconscious patient having acidosis is much more difficult and the mortality rate conspicuously higher. Even among the group fulfill-

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*While ketosis is an absolutely constant finding in diabetic acidosis, it should be remembered that it may be induced by salicylates, antipyrine, cyanates, acetates, x-rays, alkalosis, anxiety, starvation, vomiting, major infections, fractures, exhaustive exercise, major surgery, and intestinal obstruction.

†Dorland's Illustrated Medical Dictionary, 23rd Edition. Philadelphia: W. B. Saunders Company, 1957.

ing Joslin's definition the mortality ranges from 3 to 15 per cent.

To the patient "coma" is a fearful word, synonymous with deep unconsciousness and a state near death, despite the clinical modifications described above. It has been our practice to avoid the use of this word unless the patient is indeed virtually unconscious. Clinically, the terms "moderate," "severe," and "profound" ketoacidosis should be quite adequate to describe all types of so-called "diabetic coma" which are not characterized by unconsciousness in addition to other symptoms and signs of ketoacidosis.

Before attempting an analysis of the numerous metabolic disturbances involved in a given case of diabetic acidosis and/or coma, the therapist must immediately realize that lack of sufficient insulin is the common denominator of all these complexities. Underestimation of the insulin requirement has been the commonest source of error in treatment. A pardonable aspect of this error is the fact that we have no sure way of knowing the exact immediate need for insulin except by following the decline in concentration of glucose in the blood by serial determinations at frequent intervals (every one or two hours). The time-honored custom of assuming that all cases with similar initial blood glucose concentrations will require the same amount of insulin is exploded by the numerous instances of severe insulin resistance encountered. Classical among such cases is the patient of Boulin[2] who required 19,100 units of insulin intravenously over a period of sixteen hours to effect an adequate reduction of the blood sugar level. (It was a perfusion of insulin at the rate of 1,200 units per hour.) This saved the patient's life.

Rapid blood ketone determinations, as described by Duncan[3] and by Guest,[4] are not only reliable for the immediate recognition of the degree of ketosis present but also provide a dependable guidepost for assessing the degree of insulin resistance in a given patient. The method of Guest§ is as follows:

Acetest tablets (manufactured by Ames Chemical Company, Elkhart, Indiana) and a series of standard solutions of acetone must be available. When treated with drops of solutions containing acetone or acetoacetate (diacetic acid), these tablets develop colors ranging from pale yellowish-lavendar to deep purple.

Standard Solutions of Acetone.—Prepare a solution containing 100 mg. of acetone per 100 ml. by measuring acetone C.P. (sp. gr. 0.789, taken as sp. gr. 0.8) into a volumetric flask and diluting with distilled water: i.e., 0.5 ml. in 400 ml., or 2.5 ml. in 2 liters. Prepare ten dilute standards by delivering aliquots of this solution (1 cc.=1.0 mg.) from a burette into volumetric flasks (100 ml.) and dilute to volume to give concentrations 6, 9, 12, 15, 18, 24, 30, 45, 60, and 75 mg./100 cc.

Samples of serum or plasma are prepared in small quantities by any of the standard methods. Capillary hematocrit tubes, after centrifugation, can be cut with a file just above the packed cells and will yield drops of plasma adequate for testing ketone levels with the Acetest tablets.

Estimation of Ketones.—Arrange Acetest tablets in a row on a white card marked with figures to indicate the acetone standards to be used (less than ten tablets if the whole range is not needed) and a second row of tablets on another card, marked with pencil to indicate the dilutions of the blood filtrates to be tested. On each tablet in the row for standards place a single drop of the acetone solution indicated, and on each tablet on the other card a drop of the blood filtrate indicated. After two minutes, allowed for full development of the colors, compare and select the colors that most nearly match.

Calculation.—Concentration of acetone in the standard, expressed in equivalents of acetoacetate (column two or three in Table I) x dilution of sample with matching color=concentration of acetoacetate (diacetic acid) in the sample.

The "acetone equivalent" values are based on the finding that acetoacetate gives a color with the sodium nitroprusside reagent 5.3 times stronger than the color given by equimolar amounts of pure acetone. The molecular weight of acetone is 58 and that of acetoacetic acid is 102. Therefore, the concentration of acetone in the standard x the dilution of the filtrate with matching color divided by 5.3 x 58/102=mg. of acetoacetate expressed as mg. of acetone per 100 ml.; or, divided by 5.3 x 58/102 x 102/10=mEq. of acetoacetate (anion) per liter of sample. The conversion of these equivalent values is indicated in Table I.

This table can be conveniently mounted under a glass or plastic plate and the tests then performed with the series of tablets placed in juxta-position to the row of figures indicating the standard solutions, with a parallel row of tablets for tests of the "unknown" filtrates (Table I).

It is important to realize that blood and urinary ketone levels do not always bear a constant relationship to each other (i.e., not infrequently the blood ketones may be considerably elevated while

§The authors are grateful to Doctor George M. Guest for permission to describe this method which will be published in more detail in a forthcoming article by Doctor Guest.

TABLE I. SAMPLE TABLE FOR RECORDING DATA IN THE RAPID BLOOD KETONE METHOD OF GUEST

Standards					*Samples*
Acetone standards mg. per 100 cc.	= Acetoacetate (acetone) mg. per 100 cc.	(anion) mEq. per liter			Dilutions and name or number of blood filtrate, serum or freshly passed urine.
75	25	2.5	○	○	
60	20	2.0	○	○	
45	15	1.5	○	○	
30	10	1.0	○	○	
24	8	0.8	○	○	
18	6	0.6	○	○	
15	5	0.5	○	○	
12	4	0.4	○	○	
9	3	0.3	○	○	
6	2	0.2	○	○	
0	0	0	○	○	

Place on each circle an Acetest Tablet (Ames Co.)

In the row for standards place on each a drop of the acetone solution indicated; in the other row, a drop of the sample.

Calculation: Concentration of acetone in standard expressed in equivalents of acetoacetate (in col. 2 or 3) × dilution of sample with matching color = concentration of acetoacetate in sample.

the urinary ketones may be relatively low in concentration especially in the presence of renal impairment while the contrary may be true in other situations, especially when renal output is efficient and rapid). In such instances the value of the method described by Guest in the management of diabetic coma is self-evident. Since the plasma ketone concentration closely parallels the degree of clinical ketoacidosis and/or coma, this method provides an excellent prognostic as well as therapeutic guide to patient evaluation. Levels of 1 to 2 mEq./liter represent mild ketosis. In extreme ketosis levels may reach 10 mEq./liter.

While the procedure of Guest is relatively simple and requires minimal technical skill, there might conceivably be situations in which even this method exceeds available facilities. Under such circumstances a very crude but reliable method of assessing blood ketone levels consists of placing a drop of whole blood on an Acetest tablet, allowing ten minutes for clotting to occur. The clot is then lifted off with a piece of paper or an applicator stick, and the surface of the tablet is observed for the presence of a purple color. This method will readily detect 25 mg. (2.5 mEq./liter) of diacetic acid per 100 ml. of whole blood, and with close scrutiny smaller quantities can be detected. However, this can at best be considered only a qualitative test. The same may be said of placing a drop of undiluted serum or plasma on an Acetest tablet.

Although the diagnosis of diabetic ketoacidosis and/or coma is irrelevant to the subject of this treatise, some mention must be made of unfortunate errors which still occur in the distinction between so-called hypoglycemic coma and diabetic coma. The physician who is not certain as to which of these conditions has eventuated in the unconscious state of his patient should remember that *it is infinitely less hazardous to administer more glucose to a patient in diabetic coma than to give more insulin to a patient in insulin coma.* When there is a shadow of a doubt, discretion is obviously the better part of valor, and withholding insulin for thirty minutes pending a blood sugar report in such cases is not to be criticized.

We advise against abandonment of frequent blood sugar determinations; their obvious value is unquestioned in assessing response to insulin and guarding against dangerous hypoglycemic coma which can be easily precipitated by too intensive insulin therapy especially as ketosis diminishes.

Blood sugar determinations should be performed by a "true" blood sugar method[5,6] such as the Somogyi-Nelson technique since low values may be masked by non-glucose reducing substances included in other methods such as the Folin-Wu technique.

TABLE II. BLOOD SUGAR LEVEL CORRELATED WITH INSULIN DOSE
(153 Coma Cases)

Admission Blood Sugar (mg. %)	Average Insulin Dose Needed First 3 Hours (units)
1300-1600 mg. %	800 units
1000-1300 mg. %	490 units
600-1000 mg. %	317 units
400-600 mg. %	224 units
200-400 mg. %	110 units
100-200 mg. %*	56 units

*Low values due to administration of insulin on way to hospital. (From Joslin, E. P., Root, H. F., White, P., and Marble, A.: Treatment of Diabetes Mellitus, Ed. 9. Philadelphia: Lea and Febiger, 1952, p. 371.)

As a rule of thumb, Joslin[1] suggests a preliminary dose of 50 to 100 units of unmodified insulin. At least half of this should be given intravenously for its immediate effect. We have followed this initial dosage plan for all patients in whom it was considered too hazardous to delay insulinization long enough for a blood glucose report. If anything, this dosage estimate errs on the conservative side, but the latter is to be desired as prophylaxis against insulin shock. Not infrequently the subsequent blood sugar report discloses that a much higher initial insulin dosage was indicated. Table II shows an analysis of 153 coma cases in which Joslin correlated average insulin doses necessary during the first three hours with corresponding initial blood sugar values. This is purely an arbitrary analysis and could not be depended upon as a fool-proof guide to estimating initial insulin requirements in the specific patient.

If it is found in retrospect that from one-half to two-thirds of the total twenty-four hour requirement of insulin was given in the first three hours, the clinician has probably used excellent judgment in estimating the initial insulin dosage. Unfortunately this is simply a "hindsight" observation and serves no useful purpose in early management of the patient. The exigency of immediate large doses of insulin is to arrest polyuria and gylcosuria which in turn prevents further dehydration and dangerous excretion of potassium. Such rapid treatment has as its prime objective the restoration of normal feeding as soon as possible.

Intravenous Therapy of Diabetic Ketoacidosis and Coma

The long controversial question of intravenous glucose therapy in diabetic coma is now virtually resolved. The vast majority of therapists now interdict the use of intravenous glucose before the blood sugar has approached normal levels through the exhibition of insulin for the following reasons:

1. Glucose prevents rehydration of cells already depleted by prolonged hyperglycemia. Indeed, it increases cellular dehydration, which may eventuate in renal shutdown.

2. It may accelerate the rate of potassium loss from the serum via increased diuresis. (Also, potassium enters the cells when glycogen is formed so that if glucose is given, and enough insulin injected to "cover" the glucose, the resultant excessive glycogen formed may presumably carry potassium into the cells with it, further depleting the serum potassium concentration.) Under these circumstances hypokalemia can be fatal. Root, Story, and Cortesi[7] maintain that one of the three hazards in treatment of diabetic coma is the danger of inducing hypokalemia if glucose solution is given particularly during the full activity of insulin when the blood glucose level is falling rapidly.

3. In giving glucose early one disrupts the most reliable hallmark of insulin action—the response of the blood sugar observed in serial determinations.

4. Glucose already present in the blood can be just as efficiently utilized as injected glucose if enough insulin has been administered.

Correction of Electrolyte and Fluid Disturbances in Diabetic Acidosis and Coma

Newer concepts[8,9] and refinements in laboratory techniques for the diagnosis and correction of serious electrolyte and fluid disturbances have made it incumbent upon the general practitioner to acquire a practical working knowledge of such parenteral therapy, notwithstanding the fact that more elaborate facilities such as the flame photometer are available only in larger medical centers. The objective of this commentary is to outline techniques of diagnosis and therapy which can be done in smaller communities with minimum facilities, but the latter presupposes access to determinations of the plasma carbon dioxide combining power, chlorides, and blood glucose.

If such minimum facilities are not available, the patient should be given emergency treatment and transported to the nearest medical center so equipped. The risk of transporting the patient is still considerably less than the risk of guesswork in fluid and electrolyte correction, not to mention that it would be inexcusable to guess at critical insulin requirements.

The correction of fluid and electrolyte imbalance in diabetic acidosis and coma is a problem best considered under four headings as follows:

1. Fluid volume deficit
2. Bicarbonate deficit ("primary alkali deficit")
3. Sodium deficit
4. Potassium deficit

The calculations to be described can also be applied to management of conditions other than diabetic ketoacidosis and coma, such as renal acidosis and diarrhea. However, in patients whose basic problem is one of vomiting with consequent loss of hydrochloric acid, only the calculations of volume should be used and *not* calculations of bicarbonate deficit. Obviously, these calculations cannot be used in cases of so-called respiratory acidosis and respiratory alkalosis. In the plan proposed, correction of sodium deficit is indirectly included in calculations of bicarbonate deficits. The correction of potassium deficit can be effected by use of the "rule of thumb" and evaluation of clinical and electrocardiographic observations (or more directly by the flame photometer when available).

Diagnosis of Fluid Volume Deficit.—This is simply a qualitative appraisal of dehydration effected by careful correlation of the history, (degree of thirst, vomiting, polyuria, diarrhea, et cetera), clinical appearance (edema, dry skin, soft eyeballs, parched tongue, tissue turgor, et cetera), and laboratory data. Urine specific gravity and, if facilities permit, urinary chlorides are helpful. (If the urine contains more than 5 gm. sodium chloride per liter, adequate extracellular fluid volume is present.) Blood constitutents indicative of dehydration include a rise in blood urea nitrogen with normal creatinine and rising hematocrit. Weight of the patient when accurate is, of course, a valuable guide.

Calculation of Fluid Volume Deficit.—Analysis of the above data should lead to a reasonably accurate conclusion as to whether the degree of dehydration is "mild," "moderate," or "severe" which, in turn, are estimated as 4 per cent, 6 per cent, and 8 per cent of the body weight, respectively.[10] The calculation of fluid volume deficit is thus effected as shown in Table III.

TABLE III. CALCULATION OF FLUID VOLUME DEFICIT

"Mild" dehydration deficit = 8% Body Weight (estimated).
Weight ..... lb. × 0.018 = ... liters
"Moderate" dehydration deficit = 10% Body Weight (estimated).
Weight ..... lb. × 0.027 = ... liters
"Severe" dhydration deficit = 15% Body Weight (estimated).
Weight ..... lb. × 0.036 = ... liters

Diagnosis of Bicarbonate Deficit (Carbon Dioxide Combing Power).—As stated previously, facilities for accurate determination of the carbon dioxide combining power of the blood are a prerequisite for proper evaluation of bicarbonate deficit. The result must be expressed as mEq./liter which is accomplished by simply dividing volumes per cent by 2.22. Twenty per cent of the patient's weight in kilograms is expressed as the extracellular fluid volume in liters.

Calculation of Bicarbonate Deficit in Extracellular Fluid Volume of the Patient.[11,12]—The first step here is to determine the deficit of bicarbonate in the patient by simply subtracting the carbon dioxide combining power of the patient in mEq./liter from the normal value of 25 mEq./liter. This deficit in mEq./liter is then converted into the total mEq. deficiency of bicarbonate by simply multiplying the former by the extracellular fluid volume of the patient in liters. The amount of intravenous 1/6 molar sodium lactate required to correct this deficit is calculated by multiplying the total mEq. deficiency of bicarbonate in the extracellular fluid volume of the patient by 6, since each mEq. deficiency is equivalent to 6 cc. of 1/6 molar soduim lactate. This calculation will also indirectly correct the sodium ion deficiency. The carbon dioxide combining power should be repeated at least every four hours and oftener in difficult cases. Great care should be exercised not to "overshoot" the mark and induce dangerous alkalosis! Calculations of bicarbonate deficit and correction of the deficiency are summarized in Table IV.

Diagnosis of Plasma Potassium Deficit.—Hy-

pokalemia is detected most rapidly and accurately by the flame photometer. If this instrument is not accessible, the clinician is obliged to rely upon the well-known electrocardiographic findings (lowering and broadening of T waves, lengthened Q-T interval, increased U wave, depressed S-T segment) and clinical signs which are reversible with correction of the deficit. The clinician should beware of too implicit acceptance of electrocardiographic evidence of hypokalemia since this pattern is mimicked by numerous other conditions among which are cardiac disease, hypertension, shock, certain drugs, and pulmonary embolism. A singular handicap is the absence of a "base line" electrocardiogram taken perchance prior to the patient's illness. The danger of hypokalemia is most imminent when insulin action is maximal, especially if excessive parenteral glucose is administered to offset a rapid decline in the blood sugar level. As mentioned previously, excessive glucose administered, coupled with accelerated anabolic processes of glycogenesis, causes a rapid shift of potassium from the plasma into the cells. Potassium depletion is further enhanced by dilution of the extracellular compartment and by direct loss incident to increased diuresis. Since parenteral potassium therapy is a delicate problem fraught with the danger of inducing hyperkalemia, should calculations be inaccurate, it should always be given *orally* when the patient is able to swallow and is not vomiting. A stomach tube may overcome the latter difficulty. We have not seen hyperkalemia induced by oral* administration of potassium salts. By the parenteral route, one should always err on the conservative side in estimating dosage, especially when flame photometer estimations are not available.

TABLE IV. CALCULATION OF BICARBONATE DEFICIT

A.	Normal CO_2 combining power (50 Vol. %)	= 25 mEq./liter
B.	Patient's CO_2 combining power ..... Vol. %	
C.	Conversion ..... Vol. % × 0.45	= ..... mEq./liter
D.	Deficit (line C from Line A)	= ..... mEq./liter
	Extracellular fluid volume	
E.	Weight of patient ..... lbs. × 0.09	= ..... liters
	Patient's TOTAL bicarbonate deficit	
F.	..... (line D) × ..... (line E)	= ..... mEq. deficit
	Volume of 1/6 M Sod. Lactate required	
	..... (line F) × 6	☐ cc.

TABLE V. CALCULATION OF PLASMA POTASSIUM DEFICIT

A.	Normal plasma K	5 mEq./liter
B.	Patient's plasma K	..... mEq./liter
C.	Deficit (A minus B)	..... mEq./liter
	Patient's extracellular fluid volume	
D.	Weight ..... lbs. × 0.09	= ..... liters
	Patient's total potassium deficit (extracellular)	
E.	..... (line C) × ..... (line D)	= ..... mEq.
	(Note: 0.6% KCl in 0.45% NaCl = 80 mEq. K/l)	
	Dose of 0.6% KCl: ..... (line E) divided by 80	☐ liters

(Dictum: Always replace potassium orally when feasible.)

Calculation of Plasma Potassium Deficit.—Once the diagnosis of hypokalemia is suspected or established serum potassium determinations constitute the only really safe method of estimating parenteral replacement therapy.[13] The actual deficit is estimated by subtracting the patient's serum potassium value from the normal of 5 mEq./liter. The total potassium deficit is then calculated by simply multiplying the deficit (in mEq./liter) by the patient's extracellular fluid volume in liters. The result is expressed in milliequivalents. Parenteral therapy can be effectively administered as a solution of 0.6 per cent potassium chloride in 0.45 per cent sodium chloride,

*An excellent preparation for oral administration of potassium is Liquid Potassium Triplex (Eli Lilly and Company) given in doses of one dram every three or four hours until the hazard of hypokalemia is eliminated.

containing 80 mEq. of potassium per liter. The actual dosage of this solution required is estimated by dividing the patient's total potassium deficit (extracellular) in mEq. by 80. The result is expressed in liters or fractions thereof (Table V).

An alternate parenteral solution can be prepared as follows:

The quantity of potassium needed can be added to one liter of 0.9 per cent saline (one gram of potassium chloride contains 13.4 mEq. of potassium). *It should not be overlooked that potassium cannot be administered by syringe and must be dissolved in a minimum of 500 to 1,000 ml. of suitable intravenous solution before administration.*

The "Diabetic Coma Chart"

Many years ago the sage Doctor Russell Wilder emphasized the importance of devising a chart to record in organized detail the many events which transpire concurrently in diabetic ketoacidosis and/or coma. The busy physician must have quick and complete insight into these data from hour to hour and day to day until the patient is completely out of danger. Nothing is more confusing than a bulky hospital chart with laboratory tests, insulin dosage, fluid balance, electrolyte replacement therapy, et cetera, scattered in helter-skelter fashion. The physician can easily devise his own "coma chart," but the modification of Wilder's original coma chart is proposed for those who may wish to use it (see chart).

Summary

An attempt has been made to outline a practicable approach to the therapy of diabetic ketoacidosis and/or coma within the limited facilities of the general practitioner. Obviously this vast and controversial subject cannot be comprehensively presented in this short treatise. Certain basic fundamentals of good medical and nursing care are omitted in the interest of brevity and because such information is readily available in standard textbooks.

Lack of sufficient insulin is the common denominator of the numerous metabolic complexities of diabetic acidosis and coma. Probably the commonest source of error in treatment is underestimation of immediate insulin requirement. Suggestions are proposed to avoid or minimize this error.

A simplified approach to the correction of profound electrolyte disturbances incident to diabetic ketoacidosis and/or coma has been proposed which should avoid the grave hazards of miscalculation when administering parenteral fluid and electrolytes to correct deficits in fluid volume, alkali reserve, sodium, and potassium. The calculations presuppose access to determinations of plasma carbon dioxide combining power, chlorides, and blood glucose. When such minimum facilities are not available, the physician should restrict treatment to emergency measures and transport the patient to the nearest medical center so equipped. To attempt therapy with inadequate facilities is foolhardy heroism which courts disaster, since diabetic coma remains a grave medical emergency with a mortality ranging from 3 to 15 per cent or higher depending upon the clinician's definition of diabetic coma.

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Surgical Management of Repeated Late Abortions

• Repeated late abortion is a distinct clinical entity accompanied, in many instances, by cervical weakness. Surgical intervention, using a modified Shirodkar operation, is described here—with evidence that the prophylactic operation is to be preferred to the therapeutic procedure.

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ABORTION WASTAGE has been variously estimated from ten[1] to forty-nine[2] per cent of all pregnancies. Other than the frequent findings of pathologic ova as reported by Rock and Hertig,[3] explanation for most of these losses remains obscure. Notwithstanding countless efforts of clinical investigation and therapy, prevention and treatment remains largely empiric. Results are often disappointing and the success of one or more therapeutic measures is open to question.

Our interest, however, is not with the therapeutic problem of early abortion, which, like King,[4] we regard as rather futile. Rather, our attention is directed to repeated losses occurring after the first trimester, and their operative prevention. Unlike early abortion, the fetus in the second trimester abortion is usually normally formed; and, following its expulsion, may live for a short period of time. In these cases it is apparent that the problem is usually one of either insecure attachment of the placenta or inability of the cervix to hold the pregnancy secure. Thus, at this late stage, where abortion occurs without appreciable bleeding and where other pathologic causes are excluded, the incompetent cervix may be regarded as the evident cause.

Lash and Lash[5] were the first to draw attention to the finding of an incompetent internal cervical os as a contributing cause. Clinical and radiological evidence supports their contention. They and several others[1,4,6-8] attribute this cervical weakness in practically all cases to previous trauma. While the cervical defect may be essentially an anterior one, Shirodkar[9] as well as Greene-Armytage and Browne[10] regard the deficiency as one of a more general nature, or as a specific defect located elsewhere. In a series of cases just published, Picot and associates[11] found no evidence of antecedent cervical trauma.

Surgical correction may be performed before conception or during pregnancy. If an anterior defect can be demonstrated beforehand, its excision and repair, as advocated by Lash and Lash,[5] becomes a relatively simple matter. Where this is not the case, a therapeutic operation, as developed by Shirodkar,[9] may be performed during pregnancy when the cervix is found partially dilated and the membranes bulging. As originally described, he closed the cervix in purse-string fashion employing three double strands of No. 2 chromic catgut. Independently, Ian McDonald[7] of Melbourne developed a similar technique of suture closure also as a therapeutic operation. Live births with survival were obtained in 43 per cent of his patients. Barter, Dusbabeck, Riva and Parks[12] earlier this year reported a series of twenty-two cases with fourteen successes. Durfee[8] subsequently published a series of twenty-four patients with fetal salvage in seventeen cases. Neither report indicates how many had therapeutic, or prophylactic, operations. While homologous fascia from the thigh was originally employed, preference of both is now for the use of non-absorbable suture material. Where there is a history of repeated late abortion, Greene-Armytage and Browne[10] of London prefer to do a modified Shirodkar operation

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as a prophylactic procedure in early pregnancy, or even before conception. Similarly, it is our belief that better results can be obtained if the operation is carried out in pregnancy prior to the

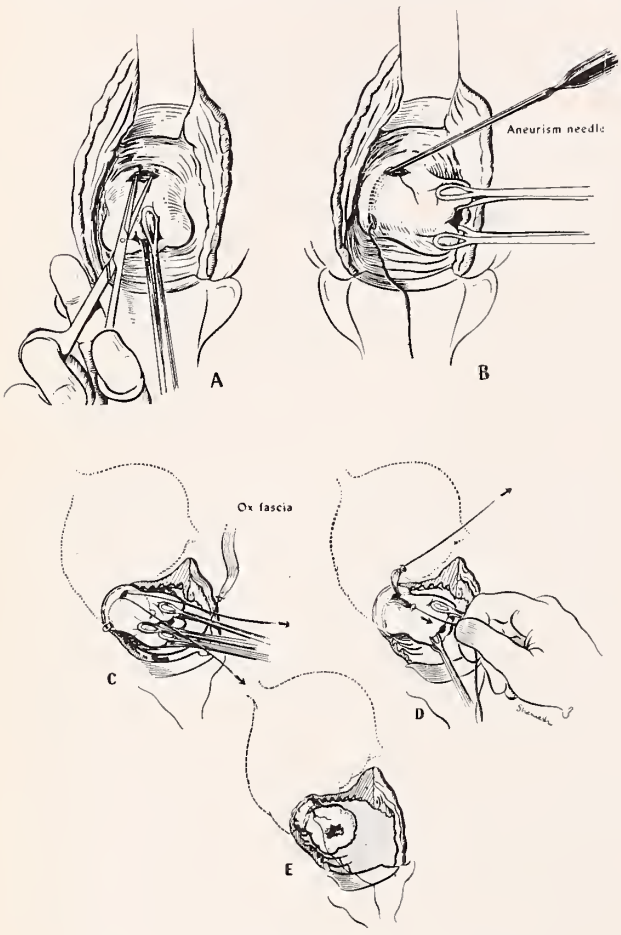


Fig. 1. Modified Shirodkar operation

time of anticipated late abortion. In order to avoid the possible retention of an early defective abortus, it is our practice to defer the operation until after the sixteenth week of pregnancy.

Surgical Management

The patient is prepared for vaginal plastic surgery in the usual manner except that the preoperative enema is omitted. Four hundred milligrams of progesterone is administered intramuscularly as a prophylactic measure. The operation is performed under general anesthesia. Good exposure is obtained with the help of several deep vaginal retractors.

The anterior lip of the cervix is grasped by a sponge forceps and drawn down. The anterior vaginal wall mucosa is incised transversely with Mayo scissors just below the level of the bladder attachment (Fig. 1A). Thereafter the bladder is dissected upward by blunt dissection. Next the posterior lip of the cervix is similarly grasped and elevated. A like incision is made in the mucosa at 6 o'clock position. Then, at the level of the internal cervical os, the submucosa is circularly tunneled by curved aneurysm needle. It is introduced at the 12 o'clock position and in counterclockwise fashion advanced around the cervix. In some of our cases additional incisions were necessitated at 9 and 3 o'clock positions (Fig. 1B). Black silk suture carried through this artificial tunnel by the aneurysm needle is transfixed and tied to a strip of ox fascia (Fig. 1C). In turn, the fascia is drawn up through the channels from below such that ultimately both free ends protrude through the original 12 o'clock incision (Fig. 1D). Finally, the ox fascia is drawn taut and securely tied, anteriorly, in purse-string fashion at the level of the internal os. As recommended by Barter,[13] the knot is anchored to the cervix anteriorly and the fascia also transfixed to the cervix posteriorly with fine black silk. Anterior and posterior mucosal defects are then closed with continuous 000 chromic catgut (Fig. 1E).

Postoperative care of the prophylactic operation is simple. Antibiotics and massive doses of progesterone are continued for three or four days. Unlike the prolonged bed rest usually advocated following the therapeutic operation, our patients are allowed up on the second or third day and discharged by the tenth day. The patient is advised thereafter to avoid strenuous activity and refrain from coitus.

Case Reports

Case 1.—Mrs. P. S., aged twenty-seven, para 0 gravida 3, gave history of previous spontaneous abortions at twenty-two weeks and twenty weeks. There had been no antecedent surgery or trauma to the cervix. A prophylactic modified Shirodkar operation was performed on January 29, 1957, at eighteen weeks' gestation. Postoperative course was afebrile and uneventful. Elective Cesarean section was performed at thirty-eight weeks with delivery of a 5 pound 8 ounce infant which survived.

A second pregnancy has followed. Frequent examinations revealed good competence of the cervix and, accordingly, the Shirodkar operation was not repeated. Labor began spontaneously early in the morning of the day of scheduled repeat Cesarean section (September 5, 1958). Vaginal delivery of a 6 pound 6 ounce living female infant followed an uneventful labor of two hours.

Case 2.—Mrs. J. E., aged twenty-two, gravida 4 with no living children, lost her first pregnancy at fifteen weeks and her second at twenty-three weeks. At twenty-

two weeks' gestation during the third pregnancy, the cervix was found 3-4 centimeters dilated with membranes bulging and fluid leaking. Despite progesterone therapy and bed rest, a deadborn macerated fetus was delivered one month thereafter. On March 2, 1957, at twenty weeks' gestation, a prophylactic modified Shirodkar operation was performed without complication. Premature labor began at thirty-two weeks resulting in breech delivery per vaginum of a 3 pound 8 ounce female infant which survived. Palpation of the cervix revealed no evidence of the fascia or cervical abnormality.

Mrs. E. is again pregnant with last menstrual period April 18 of this year. Repeated examinations of the cervix revealed good competence until the twentieth week. Associated with symptoms of watery vaginal discharge (which we regard as highly significant) and pelvic pressure, the cervix was found 2 centimeters dilated with membranes intact. A therapeutic Shirodkar operation was performed forthwith. The cervix has since remained closed. She is now twenty-three weeks pregnant.

Case 3.—Mrs. R. A., aged thirty-one, gravida 5, had a spontaneous delivery at thirty-six weeks in 1949 with survival of the infant. The succeeding three pregnancies terminated spontaneously at twenty-eight, fifteen, and twenty-eight weeks respectively with no survivals. On July 1, 1957, at twenty-five weeks, a modified Shirodkar operation was carried out prophylactically. Other than the development of mild preeclampsia, the balance of her pregnancy remained uncomplicated. Labor occurred spontaneously at thirty-eight weeks, was of 5 hours' duration, and resulted in a vaginal delivery of a 3 pound 12 ounce infant that survived. The cervix was noted to regain firm tone and contract down particularly rapidly following the second stage making delivery of the placenta rather difficult. No defect in the cervix was palpated.

Case 4.—Mrs. H. B., aged forty-two, para 0 gravida 3, lost her first pregnancy at sixteen weeks. The following year she aborted at twenty-two weeks. There was no history of antecedent trauma or surgery. Following an uncomplicated pregnancy of twenty weeks, a prophylactic modified Shirodkar operation was carried out on January 10, 1958.

The pregnancy continued uneventfully until the development of premature labor at 34 weeks. A 5 pound 8 ounce male infant was delivered per vaginum without difficulty following a 4 hour 28 minute labor. Unfortunately, the newborn exhibited characteristic mongolism and lived for only 7 days. Examination of the cervix following delivery revealed no unusual patency.

Case 5.—Mrs. L. S., aged thirty-three, para 1 gravida 6, delivered spontaneously a living female at thirty-seven weeks in 1950. Thereafter she had successive late abortions at: twenty weeks, sixteen weeks, twenty-four weeks, and twenty weeks. None was otherwise complicated and there had been no intervening surgery or trauma. On January 14, 1958, at twenty-one weeks' gestation, a prophylactic modified Shirodkar operation was performed without complications. Her subsequent course was uneventful.

Labor began spontaneously at thirty-eight weeks. An 8-pound female infant which survived, delivered per vaginum after a labor of three hours and thirty-six minutes. Examination of the cervix immediately thereafter revealed a flabby consistency. However, good circular tonus of the internal os was regained within ten minutes.

Case 6.—Mrs. P. W., aged twenty-five, para 0 gravida 3, lost her first pregnancy at twenty-seven weeks and her second pregnancy at twenty-five weeks. A previous dilatation and curettage was performed for intermenstrual spotting. Accordingly, when the present pregnancy reached twenty weeks, a prophylactic modified Shirodkar operation was carried out. Induction at forty weeks resulted in vaginal delivery of a 7 pound 8 ounce surviving male infant. Labor was of three hours' and fifteen minutes' duration. Examination immediately thereafter disclosed no laceration of the cervix or palpable fascia.

Case 7.—Mrs. D. S., aged thirty-one, para 0 gravida 5, lost three successive pregnancies at twenty-two weeks, and her fourth aborted at nineteen weeks. There had been no previous surgery or trauma. A modified Shirodkar operation was performed during her recent pregnancy at seventeen weeks when the cervix was found 2 centimeters dilated and partially effaced. Three weeks thereafter examination again disclosed the cervix 2 centimeters dilated, but with membranes still intact. An immediate repeat operation was performed closing the cervix below the bulging membranes. During the course of the operation the torn fascia previously employed was found and was accordingly removed. Continence was again obtained, this time for about six weeks. Unfortunately, premature labor began at twenty-six weeks. The patient delivered a 2 pound 4 ounce boy that lived only three hours.

Case 8.—Mrs. V. B., aged thirty-seven, para 1, gravida 4, lost her first two pregnancies at fifteen and twenty weeks. Her last pregnancy resulted in a full-term delivery of a living male infant. Examination at eighteen weeks of the present pregnancy found the cervix 3 centimeters dilated with bulging membranes. Therapeutic Shirodkar operation held the pregnancy for three weeks until premature separation of the placenta caused intrauterine death and resulted in late abortion. The cervical os contracted down well immediately thereafter.

Case 9.—Mrs. H. N., aged twenty-nine, para 0 gravida 6, lost her first pregnancy at twenty weeks. Four successive losses occurred at three months, each with an apparently normal fetus. Her last abortion at eight weeks appeared to be due to defective products of conception. Five of these were followed by dilatation and curettage operations. Roentgenographic studies revealed a bicornuate fundus and incompetent cervix. A No. 5 Hegar dilator could be passed without resistance or sensation of pain. Accordingly, combined uterine unifi-

cation and Shirodkar operation were performed as a prophylactic measure. Recovery was uneventful. The patient has not yet become pregnant, but interestingly, complains of dysmenorrhea with each of her subsequent menstrual periods.

Case 10.—Mrs. H. P., aged thirty-seven, para 1 gravida 6, had two early abortions followed by dilatation and currettage operations. Her third pregnancy was lost at five months, presumably caused by a low submucous myoma. Myomectomy was subsequently performed and the next pregnancy went to thirty-eight weeks with rapid vaginal delivery of a surviving female infant. Her last pregnancy again aborted at twenty-five weeks, without explanation. Shirodkar operation was consequently planned and performed at twenty weeks of her present pregnancy. Mrs. P. is now thirty-six weeks pregnant.

Case 11.—Mrs. C. B., aged thirty-two, para 1 gravida 5, had one full-term pregnancy with surviving infant. Subsequent losses have occurred at fourteen, twenty-eight, and twenty-eight weeks. Her present pregnancy remained uncomplicated until at eighteen weeks the cervix was found partially effaced with beginning dilatation. A therapeutic operation closed the cervix. She is now pregnant and is in her twenty-third week.

Discussion

Our patients were selected on the basis of their unfavorable past obstetric records and/or findings of partial dilatation of the cervix. Where the operation was performed on a prophylactic basis, only those cases were selected where there was history of at least two or more repeated losses as either late abortions or early premature deliveries, without intervening viable births. It may be argued that without control cases, successful results of this surgery are not entirely convincing. In defense of our belief, however, we contend that in effect our patients' past histories serve as their own controls. We have had only limited experience with radiographic studies in the non-pregnant patient with history of late abortion, but find as have Rubovits and associates,[6] a demonstrable defect in the internal cervical os.

The etiology of the incompetent cervix remains obscure. We were unable to find history of trauma to the cervix in several of our cases. A previous spontaneous delivery occurred in each of five cases. A dilatation and curettage was performed in four other patients. Thus we feel, in contradiction to the opinion of Lash and others, that the etiology need not be antecedent trauma. Quite possibly many cases of cervical incompetence may be of congenital nature. In support of this contention, that trauma need not be responsible for cervical weakness and late abortion, were the findings of Finn[13] in a study of 611 pregnancies following 390 vaginal operations. The majority had minor or major operations including the cervix, yet he found "The incidence of abortion and premature labor was not higher than the clinic average."

Our patients have, with two exceptions, carried their pregnancies to the births of viable infants or are still pregnant; one of the failures may be attributed to premature separation of the placenta. Two women have again become pregnant; one recently delivered per vaginum at thirty-eight weeks (after previous Cesarean section); the other developed partial cervical dilatation at twenty weeks necessitating a repeat operation. Our success with this small number of cases may be attributed to several factors, most important of which is the prophylactic application of the operation. We are firmly convinced that the elective performance of the operation will be much more rewarding, and can be better conducted, than when surgery is delayed until the so-often-silent processes of labor have already begun. General anesthesia, adequate exposure and gentle handling of tissues are also regarded as contributing factors to successful outcome. On the bases of experimental work of Csapo[14] on pregnant rabbits, we have routinely employed massive dosages of progesterone before and after surgery. Since we have no controls, we can only presume such hormone therapy to be effective prophylaxis against uterine contractions at this critical time. Substantiating this belief, Hodgkinson and associates[15] have recently published a report of their clinical experience with high potency progesterone in threatened abortion. They attribute an increase in salvage rate in part to this hormonal inhibition of myometrial contractions.

The technique employed is a modification of the Shirodkar operation and is substantially the same as that recommended by Douglas and Stromme[16] in "Operative Obstetrics." We have used ox fascia, however, in preference to non-absorbable material such as polyethelene tubing. While superior to conventional suture material which may cut through the cervix, polyethelene tubing is not ideal because of its tendency to slip. Ox fascia possesses equal strength and has the advantage of staying secure as a flat band about the cervix. In time it is believed to be replaced by fibrous connective tissue derived from the cervix. In no case has there been a postoperative febrile

course suggesting irritative reaction to the fascia. We have had no experience with dacron mesh as proposed by Dusbabeck,[17] but believe it has the same disadvantage of necessitating Cesarean delivery, as do other non-absorbable bands.

patient was likewise initially prepared for Cesarean section; however, premature vaginal delivery occurred at thirty-two weeks with infant survival. During the present pregnancy the cervix maintained its security until the twentieth week. A

TABLE I. SUMMARY OF ELEVEN PATIENTS (TWELVE PREGNANCIES) FOLLOWING MODIFIED SHIRODKAR OPERATION

	Case	Age	Gravida	Living Children	Termination Prev. Preg. in Wks.	Shirodkar Op. (Wks.)	Results
1.	P.S.	27	3	0	22, 20	18(Px)	C.S. F., 38 wks. ('57)
						—	Vag. del. F., 38 wks. ('58)
2.	J.E.	22	4	0	15, 23, 22 (27)	20(Px)	Vag. del. F., 32 wks. ('57)
						20(Rx)	Preg. at 23 wks. ('58)
3.	R.A.	31	5	1	36, 28, 15, 28	25(Px)	Vag. del. M., 38 wks.
4.	H.B.	42	3	0	16, 22	20(Px)	Vag. del. M., 34 wks. Mongol (died)
5.	L.S.	33	6	1	37, 20, 16, 24, 20	21(Px)	Vag. del. F., 38 wks.
6.	P.W.	25	3	0	27, 25	20(Px)	Vag. del. M., 40 wks.
7.	D.S.	31	5	0	22, 22, 22, 19	17(Rx), 19(Rx)	Vag. del. M., 26 wks. (died)
8.	V.B.	37	4	1	15, 20, 40	18(Rx)	Aborted 21 wks.
9.	H.N.	29	6	0	20, 12, 12, 12, 12, 8	Px	Not preg.
10.	H.P.	37	6	1	8, 8, 20, 38, 25	20(Px)	Preg. 36 wks.
11.	C.B.	32	5	1	40, 14, 28, 28	18(Rx)	Preg. 23 wks.

We are as yet uncertain regarding the best method for delivery, but feel that cases should be individualized. We believe that the patient should have the benefit of trial labor. If the cervix dilates reasonably well in early labor then vaginal delivery may be expected. Otherwise, Cesarean section should be performed with suitable antibiotic prophylaxis. We doubt that it is feasible to identify and cut the circular fascia at such time when absorbable material has been employed. At any rate, it has not been necessary in the present series of cases. Postpartum examination in several instances suggests that the cervix will regain satisfactory circular tonus. Division of the ring is possible, of course, if inert material such as polyethelene tubing or dacron mesh are used. Yet by so-doing, the competence of the internal os presumably has been weakened again for future pregnancies. For such reasons, the Washington group[12] and Durfee,[8] who now prefer non-absorbable material, recommend Cesarean section.

Rubovits and associates[6] report two patients where more than one baby was delivered vaginally following the Lash procedure without destroying the successful repair. Our experience with subsequent pregnancies is also limited to two patients. The first case was terminated by elective Cesarean section at thirty-eight weeks. During the next pregnancy, the cervix was frequently examined and, because the competence was maintained, a repeat Shirodkar operation was not performed. Although a Cesarean section was again planned, labor supervened at thirty-eight weeks and was followed by an easy vaginal delivery. Our second repeat Shirodkar operation was done promptly when the cervix was found 2 centimeters dilated. The patient is now twenty-three weeks pregnant.

Until more experience has been gained with postpartum studies and repeat pregnancies, we cannot state that our modification of the Shirodkar operation obtains a more or less permanently competent cervix. Our second case would seem to refute this belief. However, we do not contemplate abandoning the use of absorbable suture material and/or the policy of allowing vaginal delivery.

Summary

1. Repeated late abortion is a distinct clinical entity frequently due to incompetent cervix. The cause in many cases remains obscure.

2. Repair of the cervical weakness is feasible and practical in pregnancy. A modified Shirodkar technique is described employing ox fascia.

3. A report is given of twelve pregnancies following modified Shirodkar operation between the seventeenth and twenty-fifth weeks of gestation. These have resulted in: seven viable births (six vaginal), and two failures—one associated with premature separation of the placenta. Three patients are still pregnant from three to sixteen weeks since surgery. One additional prophylactic operation was performed on a non-pregnant patient who had experienced habitual abortion attributed to incompetent cervix.

4. We regard the prophylactic operation as much preferred to the therapeutic procedure.

(References are on Page 855)

Intestinal Polyposis and Mucocutaneous Pigmentation (Peutz-Jeghers Syndrome)

Further Comments and Report of an Additional Case

● Peutz-Jeghers syndrome has left the realm of medical curiosities to become a well-recognized entity. As evidence of this, the authors have collected data in 117 cases. This syndrome consists of mucocutaneous pigmentation associated with intestinal polyposis. The authors maintain that the polyps in this syndrome are benign, whereas other observers claim that many of them are potentially malignant. The reader is invited to peruse the evidence and decide for himself.

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IN THE past few years the medical profession has become increasingly aware of the significance of mucocutaneous pigmentation, particularly in its relationship to intestinal polyposis. A previous report[1] from the Mayo Clinic discussed six new cases and attempted to correlate the data obtained from a comprehensive review of the sixty-nine cases reported in the literature through 1955. In this same report a new concept was proposed to explain the pathologic aspects of these unique gastrointestinal polyps.

Currently, a sufficient number of new cases have been documented to justify further reflections on some of the unusual aspects of this disease. Dissension continues to center primarily around the question of the potentially malignant character of the polyps. Our major purpose at this time is to report one additional case of this syndrome and to indicate, again, the apparent benignancy of the gastrointestinal polyps.

Dr. Bartholomew is from the Section of Medicine and Dr. Dahlin is from the Surgical Pathology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

Report of Case

A white man, aged eighty-two, was seen at the Mayo Clinic in November, 1956, because of complaints of nausea, vomiting and difficulty in passing urine. He had had symptoms suggestive of urinary retention and these had been slowly becoming more severe in the previous five years. Two weeks prior to admission he began to pass urine every fifteen to thirty minutes and to have some overflow incontinence. The day prior to hospitalization he became somewhat confused and had dyspnea, nausea and vomiting.

Physicial examination was difficult because the patient co-operated very poorly. The blood pressure was

200 mm. of mercury systolic and 90 mm. diastolic. The prostate was moderately enlarged but felt benign. A large soft suprapubic mass extended to the level of the umbilicus. An indwelling catheter was inserted into the bladder and in a period of two hours 4,100 ml. of urine was evacuated.

The concentration of hemoglobin in the blood, the prothrombin time, the results of the Kline flocculation test for syphilis, and the x-ray appearance of the region of the kidney, ureter and bladder were normal. Analysis of the urine demonstrated gross hematuria along with albuminuria, grade 3. The urea measured 194 mg. per 100 ml. of blood.

On the third day in the hospital the patient had severe oppressive substernal pain. An electrocardiogram taken a short time later showed the typical findings of acute anteroseptal myocardial infarction. Six hours after the onset of pain the patient suddenly died.

The chief postmortem findings were coronary sclerosis, a recent infarct in the apex and anterior wall of the left ventricle with rupture of the myocardium into the pericardium, benign prostatic hypertrophy and bilateral hydronephrosis. An incidental finding was that of a single polyp 1 cm. in diameter in the fundus of the stomach and six polyps that varied in diameter up to 0.5 cm. in the colon. Three of the latter polyps were in the ascending, two in the transverse, and one in the descending colon. The examiner's awareness of this syndrome led to search for and the demonstration of the characteristic pigment on the mucosa of the lips. This patient had been seen at the clinic in 1924 at the age of fifty years, complaining of nervousness and lifelong constipation. The record of a complete physical examination made at that time, including examination by a dermatologist, did not mention the presence of the pigmentation, although it mentioned that the lips were specifically studied. Also at that time x-ray examination of the stomach did not reveal any polyps, and gastric analysis showed 44 clinical units of total acids and 24 units of free hydrochloric acid.

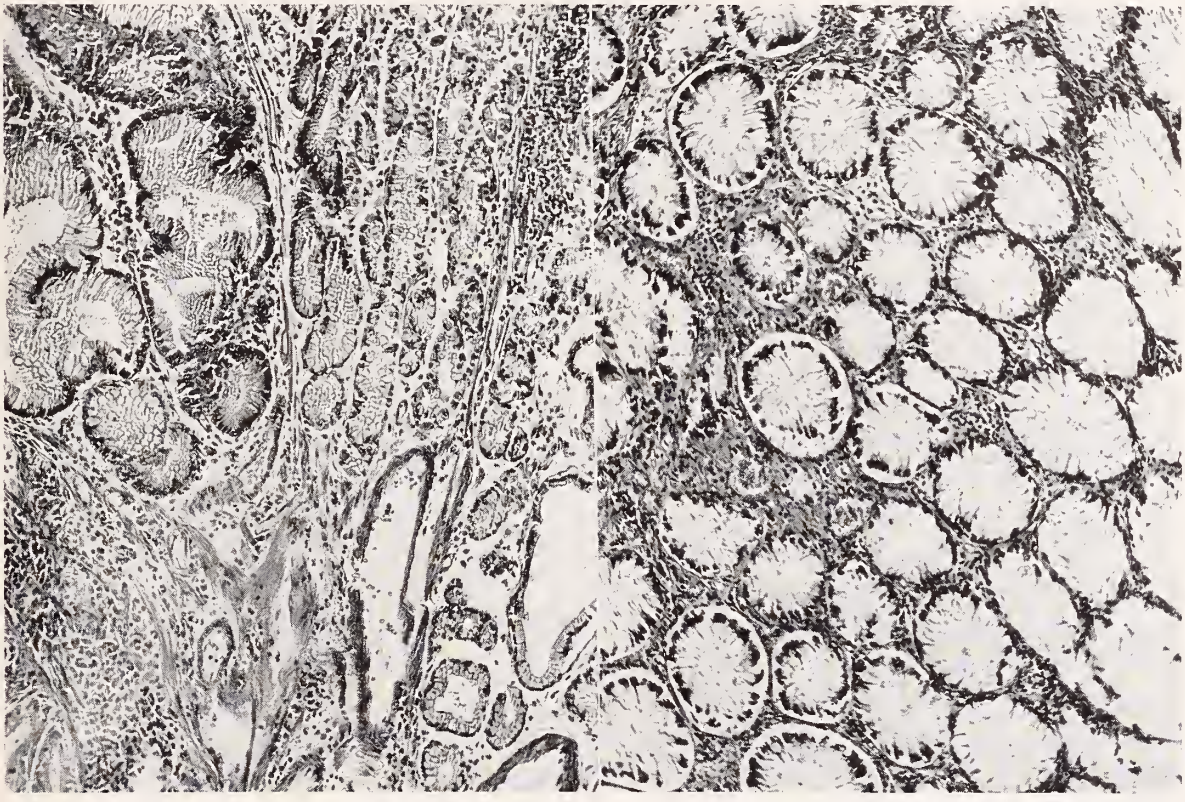


Fig. 1. Gastric polyp composed predominantly of mucous cells. A few parietal (acid) cells are present in the upper right portion. Note the bands of smooth muscle in the lower portion of the picture (hematoxylin and eosin; x100).

Fig. 2. Colonic polyp showing regularly arranged glandular structures composed of mucus-producing cells with small, basally oriented nuclei (hematoxylin and eosin; x100).

Microscopically, all the polyps were benign. The gastric polyp contained a few strands of smooth muscle extending up into its core (Fig. 1). It was composed chiefly of irregularly arranged glandular spaces lined for the most part by mucus-producing cells. A few nests of parietal (acid-producing) cells were present in the polyps. The colonic polyps were composed of columnar mucus-producing cells (Fig. 2).

Review of Literature

In a previous report,[1] seventy-five cases of this syndrome were reviewed. In the two years subsequent to the period covered by that report, forty-

two more cases[2-19] including the present case have come to our attention, bringing the total to 117. It is now apparent that this syndrome has left the realm of a medical curiosity and is rapidly becoming a well-recognized clinical entity.

Sex and Age Distribution.—In the forty-two recent cases there were twenty-five females and seventeen males, and in the entire 117 cases there were sixty-three females to fifty-four males; thus the condition has been reported somewhat more often in females. The age at the time of diagnosis in the forty-two cases varied from four to eighty-two years with an average age of twenty-nine years. This age range differs only slightly from the previously reported range of two to seventy-seven years; in contrast, the average age of 22.5 years differs appreciably from the previously reported average.

Site of Pigmentation.—The pigment was present on the lips of forty-one of the forty-two cases, and in 115 of the 117 cases (98 per cent), thus making this the single most important physical sign. It was noted on the buccal mucosa in thirty-four of the forty-two cases, and in 103 of the 117 cases (88 per cent); hence pigmentation of the buccal mucosa was the second most reliable physical sign. A peculiar freckling was noted on the extremities in seventeen of the forty-two cases, and in forty-one of the 117 cases (36 per cent). The other, less common sites of pigmentation, namely around the other facial orifices, were affected in twenty-four of the forty-two cases. Again it can be stated that the pigment was noted most often early in childhood; the lip pigmentation tended to fade, but the buccal mucosal pigment remained relatively unchanged. The apparently occasional development of the pigment later in life is exemplified by the present case. An unusual site for the pigment, the rectal mucosa, was noted in one case.[14]

Racial and Familial Incidence.—No particular race appears to be predisposed to or immune to this disease. To the growing list of ethnic groups now can be added the German, Japanese, Hungarian and Swiss. The number of apparently sporadic cases continues to rise in proportion to the number of familial cases so that in only fifty of 117 cases (43 per cent) is there a history of relatives with both the pigment and the polyps. In another fifteen cases (13 per cent) there are relatives with the pigment alone. In forty cases (34 per cent) the authors were unable to find any familial evidence of the disease. In the remaining twelve cases (10 per cent) no mention is made of a family history of the disease.

TABLE I. LOCATION OF GASTROINTESTINAL POLYPS IN PEUTZ-JEGHERS SYNDROME*
(117 Cases)

	Cases	Per Cent
Jejunum	76	65
Ileum	60	51
Duodenum	17	15
Small intestine†	13	11
Colon	42	36
Rectum	42	36
Stomach	27	23
Appendix	3	3

*All but nine of 117 patients had polyps in the small bowel.
†Description not adequate for more precise localization.

Site of Polyps.—The polps have been present in some part of the small intestine in 108 of the 117 cases, an incidence of 92 per cent. The exceptions include seven patients with polyps in the rectum alone, one with polyps in the colon and stomach, and one with polyps in the rectum, colon and stomach. The jejunum (seventy-six cases) and the ileum (sixty cases) have been the most common sites. Seventeen patients had duodenal polyps. The exact location of the polyps in the small intestine was not mentioned in thirteen cases. Only one extraintestinal polyp was noted in the last forty-two cases and this was a papilloma of the bladder. The distribution of the polyps by site of occurrence is shown in Table I. In ninety-two of the 117 cases (79 per cent) more than one polyp was discovered in the gastrointestinal tract, while in only fourteen cases (12 per cent) was the patient thought to have a single polyp. In the remaining eleven cases the data were inadequate to determine the number. Again it must be stressed that the finding of one polyp is sufficient reason for a careful search for others.

Symptoms.—Episodes of abdominal pain and some form of gastrointestinal bleeding were the major symptoms. Recurrent attacks of colicky abdominal pain characterized ninety-nine of the 117 cases (85 per cent). These were invariably related to an intussuscepting polyp, and about a third of the time they were associated with a palpable abdominal mass. Hypochromic anemia, apparently from slow loss of blood in the gastrointestinal tract, was found in thirty cases (26 per cent). Melena and rectal bleeding were present

in thirty-nine cases. Hematemesis was mentioned in six cases; in five of these it was associated with polyps in the stomach or duodenum, and in the sixth, jejunal polyps alone were demonstrated. Prolapse of a polyp through the anus was the initial complaint in two cases. Two other patients had no symptoms at all, the diagnosis being suspected because of abnormal mucosal pigmentation in one and on the basis of postmortem examination in the other. Multiple surgical procedures have been all too frequently performed but careful search for multiple polyps at the initial operation may reduce the number of subsequent operations in the future.

Pathologic Characteristics.—There continues to be a decided lack of detail in the realm of pathologic findings in the reported cases. In eight more reported cases one or more polyps have been considered to be malignant, giving a total of twenty-one cases among the 117 (18 per cent). The majority of polyps declared malignant, as reported in the first review, were found in the small intestine. The most recent reports call attention to malignant transformation in polyps in the small bowel (four cases), the rectum (two cases), the colon (one case) and the stomach (one case). Three of these patients were between twelve and twenty-two years of age and the remaining five were between fifty-five and sixty-eight years of age. In none of the reports of these cases were photomicrographs of tissue included. Again, except for Bailey's case[18] in which carcinoma of the rectum was reported, there was no mention of the polyps spreading locally or metastasizing generally. Such features as mitosis, invasion of the stalk of the polyps or the bowel wall, and hyperchromatism have been listed as the criteria for the diagnosis of malignancy of a polyp.

Comment

The complete clinical pattern of this syndrome is now quite apparent and requires little discussion. Pigmentation of the lips and buccal mucosa is almost always present. Uncommon sites for pigment even in this syndrome are becoming more frequently recognized because of the diligent search on the part of the clinician. Slightly more than half (55 per cent) of the patients have some evidence of the familial nature of this disease. The disease of the remaining patients continues to fall into the realm of sporadic mutation. The symptom complex remains remarkably uniform. A search for the abnormal pigmentation in unusual situations may occasionally be very rewarding in instances of obscure abdominal pain, recurring abdominal masses, melena and hypochromic anemias.

The major aspect of this syndrome that remains debatable pertains to the potential malignant nature of the polyps. Although in about a fifth of the cases (19 per cent) the polyps have been reported to have undergone malignant changes, there are many inconsistencies that require explanation. It is unusual that such an uncommon site for a malignant tumor as the small bowel should be so predominantly involved by carcinoma in this syndrome. It is also unusual that most malignant transformations have been reported in children and young adults. It is equally difficult to understand the total absence of local or distant metastasis from these tumors even after intervals of many years. The statement that an early abdominal catastrophe frequently overtakes these patients before malignant changes have had sufficient time to become established is not realistic in view of present-day knowledge.

The peculiar histologic characteristics of the polyps that we have been able to study have led to the suggestion that these tissue excrescences represent a developmental abnormality rather than true adenomatous polyps. The three predominant types of cells of the normal mucosa of the small intestine, namely columnar absorbing cells, goblet cells and coarsely granular Paneth cells, were found within the jejunal and ileal polyps that we have studied in five cases. Furthermore, these cells were disposed in numbers and in relation to the glandular structures much as they are in normal mucosa. Bands of smooth muscle are frequently present in the substance of the polyps. Brunner's glands may be present in duodenal polyps and parietal (acid) cells in gastric polyps in this condition (Fig. 1). This reproduction of normal histologic characteristics is unlike ordinary neoplasia, in which usually but one type of cell is proliferating. The over-all pattern of these polyps strongly suggests that they are the result of a growth disturbance similar to that which produces hamartomas of the lung. The fact that muscle is a component of the polypoid mass and that glandular structures have been present in the wall of the intestine in some reported cases further suggests that the condition represents a developmental abnormality.[2]

In patients who did not exhibit mucocutaneous pigmentation we have observed several polyps of the small intestine that were histologically identical to the polyps in our patients with the Peutz-Jeghers syndrome. Furthermore, some patients have had the typical mucocutaneous pigmentation but no evidence of polyposis. One wonders whether these two types of cases represent incomplete manifestations of the syndrome. In some instances, of course, the pigmentation was probably overlooked. We have also observed four examples of polypoid lesions of the small intestine that were composed of gastric heterotopic tissue unrelated to Meckel's diverticulum. These were in patients who did not have the Peutz-Jeghers syndrome. Similar cases have been described in the literature.[20] This polypoid reduplication of gastric glandular structures in the small intestine obviously represents a growth anomaly and perhaps lends credence to the idea that the polyps of the Peutz-Jeghers syndrome are actually a hamartomatous formation.

None of the polyps that we have studied in the Peutz-Jeghers syndrome have appeared malignant or even premalignant. Mitotic figures, although present, are seen no more frequently than they are in normal intestinal mucosa. We strongly advocate, as Dormandy[2] has, that resections should be as conservative as possible. In our own experience with seven cases the only death related directly to this syndrome was the result of malnutrition following extensive resections of bowel. A striking fact is that in a total of 117 reported cases of the Peutz-Jeghers syndrome, not one metastasizing carcinoma of the small intestine has developed.

A word of caution should be expressed concerning the polyps in the large intestine. Although the colonic and rectal polyps that we have studied in patients with the Peutz-Jeghers syndrome have appeared benign (Fig. 2), we have no evidence to suggest that these patients are immune to the development of ordinary adenomatous polyps and carcinomas in these locations. In fact it is quite likely that Bailey's[18] patient who had an inoperable carcinoma of the rectum was an example of the Peutz-Jeghers syndrome in which an incidental carcinoma of the rectum developed. Careful clinical, roentgenologic and pathologic studies must be correlated before a final plan for treatment of the colonic polyps is determined.

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Observations with Dartal in Chronic Psychoses

A Study of Seventy-one Patients

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THE purpose of this report is to summarize the results obtained in a group of psychotic patients treated with a new phenothiazine derivative, Dartal.* The study, which involved a total of seventy-one chronically ill patients, was carried out over a seventeen-month period at the Moose Lake State Hospital.

Dartal may be described chemically as 1-(2-acetoxyethyl)-4-(3-(2-chloro-10-phenothiazinyl) propyl) piperazine dihydrochloride. Although its site of action has not been positively identified, its principal effects are on the subcortical areas. Behavior studies[1] in animals indicate that Dartal and chlorpromazine have qualitatively similar effects upon the central nervous system; however, Dartal, on an equal weight basis, is five to ten times more potent than chlorpromazine. The only exception to this finding is that the two drugs effect approximately equal potentiation of hexobarbital-induced sleep time.

The seventy-one chronically ill females selected for this study, although they were in different categories diagnostically (Table I), had in common the fact that other therapeutic measures had produced little or no favorable response. Many of these had previously evidenced refractoriness to electroshock and insulin shock, hydrotherapy, various ataraxics, and even psychosurgical procedures (seven patients). In age, the patients ranged from twenty-four to seventy years; they had been ill for periods ranging from two to twenty-six years.

TABLE I. DIAGNOSTIC CATEGORIES

	Number of Patients
Schizophrenic reaction	52
Manic depressive reaction	8
Involutional psychotic reaction	4
Mental deficiency with psychotic reaction	4
Chronic brain syndrome with cerebral arteriosclerosis	2
Chronic brain syndrome with Alzheimer's disease	1

Method of Treatment

Before initiating Dartal treatment a white blood count was done on each patient; this was repeated once weekly for six weeks, then once every four weeks. Dartal was given orally in tablet form. For a few of the patients the tablet was crushed prior to administration as it was discovered that the patient had difficulty in swallowing the tablet whole. Medication was begun with 10 mg. doses twice daily, and was increased after three days to 20 mg. twice daily. Only occasionally was a dosage of 40 mg. daily exceeded and no patient received more than 75 mg. daily.

In the early weeks of the study, we administered relatively large doses but we found that this was poorly tolerated and most of the patients developed definite symptoms of Parkinson's syndrome requiring discontinuation of Dartal. By starting at a lower dosage and increasing it slowly the undesirable side reactions were reduced to a minimum and the medication was better accepted by the patients and ward personnel. On the adjusted dosage, fourteen patients developed extra-

From the Moose Lake State Hospital, Moose Lake, Minnesota.

Dartal is a trademark of G. D. Searle & Company.

*The drug under the code number of SC-7105 was kindly supplied by G. D. Searle & Co., Chicago, Illinois.

TABLE II. RESPONSE TO DARTAL THERAPY

Diagnosis	Number of Patients	Clinical Recovery	Marked Improvement	Moderate Improvement	Slight Improvement	No Improvement	Discontinued because of Side Effects
Schizophrenia	54	6	18	16	4	8	2
Manic depressive psychosis-manic	5	1	0	1	1	1	1
Manic depressive psychosis-depressed	3	0	0	1	0	2	0
Involutional psychotic reaction	3	1	0	1	1	0	0
Mental deficiency with psychotic reaction	3	0	0	1	2	0	0
Chronic brain syndrome with cerebral arteriosclerosis	2	0	0	0	0	2	0
Chronic brain syndrome with Alzheimer's disease	1	0	0	0	0	1	0
Totals	71	8	18	20	8	14	3
Percentage of total		11.2%	25.4%	28.2%	11.2%	19.8%	4.2%

pyramidal symptoms which were controlled, however, by the addition of Cogentin to the therapy.

When an optimum dosage level was reached, treatment was continued for periods varying from four weeks to seventeen months. The greater the duration of the patient's condition, the longer was the course of Dartal therapy required. However, most of the patients showed beginning improvement within two to four weeks after initiation of treatment. Dartal therapy was continued for at least two months, even when there was no response, before discontinuing it as a failure.

When a patient achieved an apparent maximum benefit from Dartal her dosage was continued for a variable period and then slowly reduced and finally discontinued. The relapse rate after discontinuation was fairly high. Some patients suffered a relapse shortly after discontinuation with a recurrence of their previous psychotic symptoms.

Three patients while receiving Dartal manifested a complete social remission and were provisionally discharged. The medication for these patients was discontinued before they were discharged from the hospital as Dartal was not yet available on prescription. All three patients returned because of reappearance of psychotic symptoms. From the history obtained on their return, it was determined that they had maintained good adjustment at home for three to six months before relapse.

It is evident that the optimal duration of Dartal therapy must be decided individually for each patient. However, patients who have been ill for extended periods will invariably require prolonged Dartal therapy. In most patients requiring prolonged treatment a daily maintenance dosage of 10 mg. to 20 mg. at bedtime was found sufficient after initial therapy had been successful.

Results

The evaluation was made by the psychiatrist in charge, the supervising ward nurses and aides.

Objectively, the normalizing influence of Dartal became apparent through increased patient cooperation with hospital and ward routine, accessibility, and by a reduction of agitation, tension, delusions, confusion, assaultiveness and other gross manifestations of psychosis. In 76 per cent or fifty-four of the seventy-one patients, changes occurred in motor activity from restless, overactive, excited manifestations to quiet and normally active behavior. Hostility reactions, combativeness and destruction of hospital property were supplanted by less aggressive behavior and the patients became easily manageable. Most gained weight while receiving the Dartal therapy.

Subjective improvement became evident when the patients expressed themselves in the following terms: "I feel better," or "I feel more relaxed." Others said, "I like my work assignment,' "'I enjoy activities and visiting with other patients," "I eat better," or "I sleep better."

The therapeutic results were graded into the following groups:

1. Clinically recovered. Psychotic symptoms objectively and subjectively completely or almost completely subsided; the patient is able to return home to have a full-day work assignment, is socially productive and shows some insight into his condition.

2. Marked improvement. Symptoms subsided considerably, objectively and subjectively; the individual is about to return home and to work, doesn't yet show insight but under minimal supervision could make an adequate adjustment outside the hospital.

3. Moderate improvement. Favorable effects are seen objectively; the patient shows some social improvement; behavior is improved to the extent that the patient is co-operative and adjusted fairly well to hospital environment, participates in industrial assignment and hospital social activities; patient frequently has ground privileges but becomes disturbed occasionally and is therefore not considered well enough to live outside the hospital.

4. Slight improvement. Patient is managed somewhat more easily but still manifests overtly psychotic symptoms with occasional hallucinations, excitement and assaultive and destructive behavior.

5. No response or very little transitory response.

Table II summarizes our findings in this study with regard to the number in each category that evidenced various degrees of improvement.

Of the total of seventy-one patients, eleven were provisionally discharged, eight are being processed for provisional discharge, and many others, for the first time in many years, are able to go home on frequent temporary visits.

Side Effects

At optimal dosage levels of Dartal, side effects were gratifyingly low in incidence and of a relatively mild nature. Drowsiness and a sense of fatigue were frequent early symptoms occasionally followed by postural hypotension. Those symptoms usually subsided within eight to ten days.

One patient in whom a macular skin reaction developed (which did not respond to antihistaminic drugs) required withdrawal of Dartal. In another patient, who had a history of previous seizures and who was receiving anti-convulsive medication, the frequency of seizures increased and Dartal was discontinued.

Summary

Dartal was found to be a highly effective tranquilizing drug in that 76 per cent of our seventy-one patients showed some degree of improvement. In many of these individuals there had been no favorable response to other therapy. Because of a low incidence of undesirable reactions (4 per cent), the patients more readily accepted Dartal therapy than other methods of treatment. Many patients were eventually maintained on a low daily dosage.

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SURGICAL MANAGEMENT OF REPEATED LATE ABORTIONS

(Continued from Page 847)

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Strategy is Everybody's Business

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It is always a genuine pleasure for a research professor to be unchained—temporarily—from his shelf in the ivory tower and afforded the chance to inflict his theories on a whole roomful of practical-minded men of affairs. I hope to prove, however, that one of the most practical, down-to-earth assignments for the American doctor today is to become a serious student of Public Affairs—including politics, economic philosophy, foreign policy, national defense strategy and the educational theory that molds your children—and through them—the will and character of this nation in the time of trouble that lies before us. For the next two decades may decide the fate of man for the next 500 years, or forever.

Doctors are often very stern when they prescribe for patients who refuse to take warning signs seriously. May I, as a layman, turn the tables and be somewhat stern with this distinguished body? The "patient" in this case is the body politic: a free society which encourages individual initiative in business, law, medicine and engineering. The diagnosis for that civilization is cancer in the intestines and paralysis of the will. The prognosis is an untimely end for a patient too soft to endure surgery, too undisciplined to take medicine, too purposeless to survive. It will involve intellectual therapy and moral hygiene; or, in old-fashioned terms, homework and willpower.

I hope to demonstrate that it is important for doctors to think about political muscle tone, ideological x-rays, and preventive education. I hope also to indicate that—unless at least one man out of every three in this room commits himself to an active role in Public Affairs—then it is unlikely that your profession will survive its competition. By "competition," I do not mean the friendly race between Blue Cross and other insurance programs. There is a new kind of "competition" abroad in the world today. This form of competition is designed to destroy—utterly and for all time—the moral, legal and political framework of the civilization which undergirds our voluntary society. If Genghis Khan and Company win this competitive struggle, there will be no second chance for freedom.

The American Voluntary Society faces two mighty competitors—World Communism and International Socialism. Some students would argue that Communism and Socialism are twin engines in the same juggernaut. But perhaps there are useful distinctions. The threat of Communism is largely external, military, scientific, political, and economic. It is an *immediate* threat. Its weapons are violence, subversion, propaganda and blackmail. The danger of Socialism is largely internal and long-range. Its weapons are education, persuasion and the ballot-box.

Many Socialists are firmly opposed to the force and terror of Communism. Socialists—unlike hard core, fanatical Communists—are sometimes open to counter persuasion from men sufficiently articulate to debate issues with them. Socialists have been voted out of power in England and Australia—but when Communists have been threatened by the will of the people, they have, as in Hungary, sent in armored divisions to crush the opposition to lifeless pulp.

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Although I do not in any way agree with Socialist economic theory, it is only fair to admit that many Socialists—as human beings—are honorable, decent and even idealistic people who want to achieve good things for humanity. They are not professional revolutionaries or conspirators like the Communists. Indeed, some Socialists are so idealistic they cannot comprehend how ruthless and cynical Communists can be. When Communists come to power, Socialist intellectuals are often the first to be purged. In Czechoslovakia, for example, a Socialist leader named Masaryk tried to walk a "middle course" between Communism and Western Democracy. He ended up, still in the middle-of-the-road all right—but from nine stories up where someone had pushed him out of the window.

Although they use different means, both Communism and Socialism confront America with a mortal challenge—and we are in danger of being caught between hammer and anvil. The external threat is ubiquitous and terribly real; yet free men hesitate to oppose the Communist enemy on all fronts for fear we may gradually surrender our own civil liberties, economic freedoms and political liberties to Big Government here at home.

Is there any way out of the dilemma? One remedy is to apply the American genius for voluntary action to the realm of public affairs. But this requires that the managers and professional leaders of our society must make Public Affairs their avocation—their full-time hobby. They dare not hold aloof from political life and from hard intellectual effort. They will have to do their "homework" in philosophy and history. And they must not wait for another Pearl Harbor or giant depression to move them to prudent action.

Pearl Harbor proves a point—because Pearl Harbor was an event that permanently changed the lives, fortunes and future of every man in this room. Beyond that, Pearl Harbor radically revised American axioms about world geography and power politics. In a handful of minutes, Japanese dive-bombers not only sank our Pacific Fleet; they also torpedoed unreal assumptions about the technical capacity of "foreigners" and the use of trade or good will as effective means of deterring agression.

We had thought that East was East and West was West. We learned the hard way that 20th Century America is cheek by jowl with the Orient, that the Burma Road intersects with Main Street, that Tokyo and Berlin—and now Moscow and Peiping—are closer to Chicago than Philadelphia was to Boston at the time of the American revolution.

These lessons were derived from the bombing of December 7, 1941. But on December 6, 1941, America was already at war, even though we didn't know it; for while it takes two to keep the peace, it takes only one to make a war. So, as America slept, the carriers of Imperial Japan were converging on Hawaii. The bombs had been loaded, the pilots briefed, the mission assigned, the die cast for our people by war lords on the far side of the earth. We learned that war starts—not at the moment of the surprise attack—but when the enemy completes *his* final plans and commits *his* resources to conflict.

Again we are at war—a new kind of war with unorthodox rules and camouflaged weapons. Our failure to recognize that fact does not affect the designs of the Kremlin. Again, it is an enemy—not ourselves—who has decided to involve the United States in conflict. Again, our own good intentions are beside the point. And, again, there is danger our country may drowse through the afternoon of its December 6, through a night of no return, into another kind of Pearl Harbor—where the hour and the place, and the cost and the sacrifice are all determined by factors outside our control.

Only this time, the odds are much heavier against America than on that other December 6, sixteen years ago. What if, in 1941, the power of Japan had already swallowed two-fifths of the earth? What if Japanese science had in some respects surpassed our own? What if Tokyo had dominated a billion people whose labor could be coerced to the cause of conquest? What if her fifth columns had penetrated every country in the world, including the United States? What if Japan had had vast natural resources, abundant water power, access to oil, no need to import steel or coal? And what if Japanese submarines and bombers, armed with atomic weapons, had been based as close as Alaska, Mexico, Canada, Catalina, Nantucket, Key West and Bermuda? The equivalent of this nightmare supposition has come to pass since 1945, with the Soviet Conquest of space and the invention of guided missiles—with the manpower of China and the resources of Eastern Europe feeding the Communist war machine—and with India, the wealth of Indonesia

and the oil-rich Middle East only three assassinations and a few street fights removed from the grasp of the Kremlin.

In short, an Asiatic conqueror stands on our frontier. Owing to science, the Atlantic Ocean is no wider than the Rio Grande. Owing to technology, the Pacific is no broader than Lake Michigan; and the wastelands of the North can be bridged in a few hours' flight. We Americans are face to face with the descendants of Genghis Khan.

Indeed, television brings Mr. Khrushchev into millions of American living rooms to lecture on the glories and inevitable triumphs of World Socialism. When a Soviet leader denounces Wall Street monopolies, his message is transmitted free of charge on the front pages of American newspapers and contributes to the general climate of opinion in this country.

"Conquest by Communication"

Khrushchev and Company are no longer a rude barbarian horde. They are disciplined in science and well-armed with engineering. They are schooled in economics and political theory. They speak many languages. They have learned to use education, literature, art, trade and even religion as weapons of subversion. Above all, they are superbly trained in the conduct of symbol-warfare —in *conquest by communication* and *warfare by words.*

No National Defense Against Symbol-Warfare

That is why we must talk about management's responsibility for Public Affairs and National Security. In the past, wars were chiefly shooting matches, and businessmen naturally left defense problems in the hands of America's soldiers. Today, the front is everywhere. Certain intangibles can literally "wash out" the material foundations of defense. If the world climate of opinion is mobilized against us by propaganda, we will lose markets, air bases and access to strategic raw materials. If, here at home, we lose the will to sacrifice or cynically disregard our spiritual traditions, our physical wealth will not safeguard American Civilization. Today, National Defense begins at the level of domestic political morality, the quality of citizenship training for our youth, and the reputation of American business growth both here and abroad. These "intangibles" are the clear responsibility of private citizens.

The Problem of National Survival

Ancient Carthage, with its luxury standard of living, refused to make minimum sacrifices to support Hannibal and did not survive. Cato's relentless chant—"Carthage must be destroyed"—did not awaken the indolent Africans from their preoccupation with business-as-usual. They couldn't believe that Cato, like Khrushchev, meant what he threatened. Similarly, Rome itself, entertained with bread-and-circuses and arrogant in its splendor, did not *survive* the onslaught of the Vandals and Visigoths. The technical skill that built her roads and aqueducts, the "know-how" of her administrators, the glory of her law—none of these assets saved an effete and over-civilized Rome.

Nor did Rome's Gross National Product protect her. The Visigoths had no GNP whatsoever—only weapons and will power. These dismal comments on Carthage and Rome could be repeated for other proud civilizations. Many times in the past, nations with high standards of living have been pushed to the grave by nations with low standards of dying.

History teaches us that when a people put indulgence before discipline, worship welfare and discourage risk-taking, they are likely soon to be forced into bankruptcy by a more vital Competition. Especially if they no longer believe in themselves. For nearly twenty-five years this country has been confused by a Cult of Doubt. Too many Americans suffer an odd guilt complex about their own way of life. Meanwhile the missionaries and conquistadors of the Communist Church Militant advance Marxism as the one true faith—and they are willing to die for their belief. That is why the battles of the Cold War are fought on our side of the Iron Curtain and at the Kremlin's initiative. That is why trying to contain Communism with a Maginot line of dollars and diplomacy is bound to fail. We forget that no *status quo* power has ever checked the thrust of a dynamic barbarian—for even if the "Defense" is 90 per cent successful on every occasion, a civilization can be driven to its doom ten yards at a time.

Startling Soviet Technical Gains

In 1945, America enjoyed absolute air-atomic supremacy. In less than a decade, Russia has broken our monoply in nuclear weapons, beaten us into space, produced jet aircraft and tested guided missiles. A system once contemptuously called the "ox-cart economy" has built the world's second

largest navy, graduates more than twice as many engineers as America, and, by ruthlessly disregarding the claims of its consumers, is out-producing us in heavy machine tools, the basic equipment of war.

The Real Threat: Soviet Fourth Dimensional Warfare

But the greatest threat to our civilization may not stem from Soviet guided missiles or engineering of atomic weapons. We have brilliant scientists, able generals and inventive industrialists who doubtless can safeguard National Security on the technological front. It is in the realm of "Fourth Dimensional Warfare"—or psycho-social combat—that we are hopelessly outclassed. We know a lot about the tricks and techniques of mass persuasion—but we have not yet applied that knowledge to the main challenge of our time—how to beat Communism without fighting a hot war.

We use advertising skills and the "hidden persuaders" to change consumer taste in salad dressing. We use high-powered public relations to boost the box-office appeal of a rock-and-roll cowboy. The Soviets exploit Pavlov, propaganda and group dynamics to overthrow empires and condition the masses to become addicts of Socialism. They use psychology to win the world.

Propaganda has always been a tool of the Conqueror. In the age of radio, television and mass literacy, however, political warfare has become a *primary* weapon. The Communists, like the Nazis before them, use the strategy of terror to frighten the West into inaction, to promote class warfare and thus divide and conquer, to encourage neutrals to ride the Soviet wave of the future. The danger of the Russian sputnik is not just that it means Moscow can probably put a missile on New York or, in the near future, aim atomic guns at Pittsburgh and Detroit from a platform in outer space. Sputnik is a symbol of Successful Socialism. All over the world, intellectuals and politicians—already half in love with Marx, are saying: "If Socialism can do such wonderful things in science, why not give it another chance with business? If Communism is efficient in the laboratory, let's try it in our factories. If Marxism can plan a sputnik and build so many splendid schools of engineering, we must have Social planning and Social engineering for every part of our society. Capitalism is obsolete."

Despite the record of American enterprise, millions of people—including some in this country—will believe that propaganda. Why? Because very few Americans can articulate what it is we really stand for. We perform, but performance is not enough in an age of mass media. The Communists capture the slogans, manipulate the symbols, pervert the communications. The *facts* are on our side; but facts don't necessarily move men to action. More often, men are motivated by *theories,* by hopes and hatreds, by envy, fear or inspiration. The Communists have done their homework in the human subconscious. From superstitions and buried emotions and bedrock beliefs, they have mixed the weapons of fourth dimensional warfare.

They have put this knowledge to practical use. With blackmail and infiltration, they captured Czechoslovakia without firing a shot. That meant they got the Skoda Works intact. For thirty years Moscow trained many oriental Communists in its academies of political warfare. The alumni are today the rulers of Red China, the overlords of North Korea, the leaders of the Communist thrust into Southeast Asia. No Russian soldiers died to score these victories. In recent months, Communism has won elections in India, Indonesia and South America. It has penetrated Syria and Egypt. It is growing like a weed in the fertile fields of Africa. It controls powerful party machines in France and Italy. Communist political strategy, in short, is not an ivory tower experiment. It pays Moscow huge dividends in real estate, military bases, raw materials, manpower—and continuous trouble for the United States.

These things don't happen by accident. Communism is not just an idea; it is a power-technique. Behind the Iron Curtain, there are more than 100 schools and colleges of propaganda and subversion. Many Russians get a first-class education in math, physics, and foreign languages. But other Russions—and selected recruits from Asia, Africa and Latin America—receive professional training in Conflict Management and psychological tactics. We have the Harvard School of Business; they have the Lenin Institute of Political Warfare—for politics is the chief business of Communism.

It is imperative, of course, for this nation to win the contest of science, electronics and military hardware. Otherwise, the Soviets will blackmail us into surrender. But we cannot guarantee our security by simply catching up or staying ahead in science. After all, we *were* ahead of them for

thirty-five years when, in spite of our technological superiority, they scored victories by irregular methods. We must create a shield of science to ward off a hot war; but we must also learn to make stronger moves on the ideological, political and economic squares of the Cold War Chessboard.

To do that, we must raise the standards and improve the quality of education in economics and philosophy, American History, political science and foreign languages—as well as in science and engineering. And we must not be afraid of competition in the classroom, for young America in the next two decades is going to face the most ruthless competition the world has ever known.

American Business cannot afford to be a mere spectator at this match for the future of mankind. The "managers" of Soviet Society are all committed to agitation and politics. They are conflict minded. You can't do business with Moscow, because Communists are not businessmen or statesmen. They are professional revolutionaries. Their foreign aid personnel are commandos; their artists are propagandists; their diplomats are spies; their economy is based on the cost accounting of the battle field, where every resource is squandered in order to defeat the enemy. Since Communists have a combat mentality, you can't reason with them. If we don't want to fight them—or surrender—we must learn to beat them in the precincts of the Middle East, in the lobbies of the United Nations, in our own classrooms and pulpits, and before the court of world opinion. Our own managers dare not be aloof to this challenge.

The Communist Party, through the apparatus of *total* government, can mobilize the total resources of the Sino-Soviet Empire. Our limited government, by definition, cannot and should not compete with Moscow across the board. If it did, Washington would have to regulate business, control the press, police our schools and regiment our voluntary agencies. This means that, unless private institutions take over many areas of non-military defense, the ubiquitous thrust of Communist Conflict Management will be unchecked at crucial points.

Why should business be asked to serve? Primarily, because our *economic* system is the crux of the whole struggle—and because, in a sense, this is the Business Society. Each year, a very high percentage of our college graduates are recruited by Business. Although there are extremely able men in other walks of life, our greatest reservoirs of inventive talent, drive, organizational vitality and brainpower lie in the world of industry, commerce and finance. Yet with certain notable exceptions, Business Leadership has not taken full responsibility for safeguarding the moral, intellectual and political framework which ensures its opportunities to make the economic system "pay off" for all America.

Businessmen Cannot Stand Aloof from Politics

This Republic was founded, of course, by bankers and lawyers, businessmen and a general. The frontier was "civilized" by business leaders who took an active part in the *citizenship function.* Today, however, many business leaders regard "politics" as beneath their dignity. Unfortunately, American civilization can be crippled—and even destroyed—by concepts which lead first to changes in the "climate of opinion" and, ultimately, to the *hard facts* of power politics.

If the "Business Society" is destroyed outright —or simply "withered" by politics and propaganda—business leadership has only itself to blame. After all, every great corporation has more than enough "surplus" to allow some of its best brains to stop thinking about production and sales and start thinking about National Defense, Citizenship Education, Foreign Policy and Economic Philosophy. One way for business to attack these complex problems systematically—and with sophistication—would be to build an Academy of Industrial Statesmanship. This would be, in effect, the equivalent of the Harvard School of Advanced Management in the area of Public Affairs, National Defense, Citizenship Training, and the "theology" of American-style capitalism. Its purpose would be to produce articulate champions of freedom who could compete with the lobbyists for Marx in the never-ending battle to condition the climate of opinion.

Another place to improve the machinery of Ideological Defense might be with the lever of Corporate Philanthropy. American Business now gives to good causes more than $500 million a year. Perhaps 5 per cent of that total should be used to pay a cultural life insurance premium on America, in the light of Khrushchev's boast that our grandchildren will live in a Soviet Socialist America. Recent events suggest at least three more questions about private philanthropy:

1. If the Soviet challenge is not to result in eventual Federal control of our schools, must not

business give even more generously to improve the quality of American education?

2. Cannot business get much more for its charitable dollar by applying the same professional standards to giving away money that it does to making it in the first place?

3. Should not industry begin to reappraise its pattern of giving—shifting some investments from the portfolio of community welfare to the portfolio of National Survival, allocating priorities, evaluating results and, in general, managing corporate largesse with the same discrimination and purpose that mark other phases of business operations?

Goals for the Future: Vice Presidents of Public Affairs

Ultimately, it may be desirable—even necessary—for great corporations to appoint Vice Presidents of Public Affairs to spend full time on these matters. A waste of talent? At the beginning of the century, certain firms refused to adopt advertising. They perished. Now, most firms are hospitable to the subtler meanings of Public Relations. But beyond orthodox "public relations" lies the arena of Public Affairs in which the fate of American Civilization may well be decided in the next decade.

The Ultimate Weapon

One word more. The ultimate weapon is neither science nor politics nor psychological warfare. The ultimate weapon is human courage—and faith in certain unalterable moral laws. Unfortunately, some people have forgotten the true meaning of America. We are already half afraid of the honorable word "revolution," although we are the true revolutionaries. It was an American Revolution that gave the world its finest revolutionary ideal—the notion that government is the servant, not the master, of the people. The Communists—who call us "reactionary"—have turned society back to the days of the Pharaohs. The monuments to "Socialist Progress" erected in the USSR—like the pyramids of ancient Egypt—have been built with slave labor.

We Must Not Perish through Failure to Recruit Our Elite

On the other hand, we Americans have developed the most flexible, continually progressing society known to man. Our so-called "masses" already enjoy luxuries undreamed off in other parts of the world. Our unique type of capitalism—almost as different from European cartel-capitalism as it is from Socialism—produces more welfare and more social justice than Communist Functionaries would even dare to imagine. But beyond that is the fact that we are truly free men. We have plenty AND freedom, together. We must not let this remarkable experiment in human liberty and opportunity perish from want of courage, or lack of sophistication, or failure to meet the problem with the ablest human resources at our disposal. That is why these questions of National Strategy and Public Affairs urgently require the attention of this audience.

It may be argued, of course, that the profession of medicine is a thing unto itself, that doctors have no business to "intervene" in the great affairs of state. The health of a democracy depends, however, to a large degree on the quality of its participating units. If doctors are to abdicate their responsibilities as citizens, why should not engineers and scientists, college professors and bankers take a similar view? In a sense, we are all professionals; and we are also all responsible for preserving our freedoms. If we are to safeguard a society in which political ethics make possible professional ethics, we dare not leave the formation of public opinion to demagogues. American doctors who are "too busy" to engage in public affairs—or do their homework—may find, in the years to come, that they may have to spend full time in some dismal underground, as did their colleagues in Nazi Germany or as men do today in Poland, Hungary and Czechoslovakia. Never before in history have the moral implications of the Hippocratic Oath been more urgently required, not alone for medicine, but for the whole free society.

The task may seem enormous; but the stakes are even higher. And let us remember that great events are always determined by minorities. Forty years ago Communism was confined to a rented room in Zurich, the brains of Lenin and the ambition of a few other outcasts. Less than 100 men made the American Revolution. For a time the whole future of this nation was carried in the will and heart of a lonely man who walked the winter lines at Valley Forge persuading his ragged countrymen not to quit and go home. There is more than enough talent in this one room to change the course of history. But time is impartial. In politics and war, as in business, time is only on that side which knows how to use it.

Very large amounts of replacement fluids are necessary as a life-saving measure in the early treatment of burns. Here is presented a workable formula for determining the large replacement needs in terms of both the colloid and electrolyte-containing solutions.

Electrolyte and Fluid Therapy in Burned Patients

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VIGOROUS controversy between different surgical centers still attends many features of the over-all management of severely burned patients. However, during the past fifteen years some unanimity of opinion has emerged regarding the early management of the severely burned patient during the so-called "shock" phase of the problem. Extensive basic research and clinical experience have crystalized several basic fundamental principles that we shall discuss.

Current ideas of replacement therapy for burned patients are an outgrowth of the 1942 meeting of the Committee on Burns of the National Research Council. Under the chairmanship of Dr. I. S. Ravdin, recommendations were made for replacement therapy predicating fluid requirements on the area of skin surface burned. The final plan adopted by this group provided 75 cc. of plasma and 75 cc. of saline to be administered for each 1/100 (1 per cent) of body surface burned, the total amount to be given during the first twenty-four hours after burn. *This initial replacement formula ignored the relationship of tissue mass to the problem of translocation of body fluids.*

The wisdom of providing electrolyte replacement as well as protein replacement was demonstrated subsequently by Cope and Moore.[1-3] Their studies revealed that the concentration of protein in burn bleb fluid is equal to one-half to two-thirds that of normal plasma, whereas the electrolyte pattern and concentration of burn bleb fluid are equal to those found in normal plasma. These classic studies assessed the pathologic physiology of body fluids in the burned patient by means of radioactively tagged protein and red cells. The authors were soon impressed with the inordinate quantities of saline and water given

as initial replacement therapy to the burned patient when replacement needs were calculated on rising values for hematocrit and hemoglobin. One patient, reported in their early studies, received during the first twenty-four hours after burn a total of 21,313 cc. of fluid, and the urine output was 6,855 cc. for this twenty-four-hour period (1947). It was apparent that "mass of tissue" constituting the body of the organism needed to be considered in replacement needs.

The significant studies of Evans, Purnell, and associates were reported in 1952.[4] They found that dogs, burned experimentally, lost plasma in the amount of 1 cc. for each 1/100 (1 per cent) of body surface burned for each kilogram of weight; this rather constant loss was manifest usually by the sixth hour after burn. Their clinical studies, reported in 1952, revealed deaths from pulmonary edema secondary to over-infusion of colloid materials and electrolytes within the first twenty-four hours after the burning accident. A patient weighing 61 kg. and injured with a 92 per cent burn received 14,460 cc. of fluid within the first twenty-four hours, and all of this was given as colloid- or electrolyte-containing solutions (5,300 cc. of plasma and 9,160 cc. of saline). Pulmonary edema was severe in this case, and the patient subsequently died. Another patient, nineteen years old and weighing 57 kg., was injured by a 63 per cent burn; he received 16,000 cc. of fluid within the first twenty-four hours and died in four days of severe pulmonary edema.

Several important guiding principles were established by these authors, and they bear repetition here because of their impact upon prevailing ideas in this field today.

1. Whole blood and plasma should be used in equal amounts for colloid replacement.

2. Colloid materials in the amount of 1 cc. per 1 per cent of body surface burned per kilogram of weight should be given in the first twenty-four hours.

3. Saline solution in equivalent amounts (1 cc. per 1 per cent burned per kilogram) was advocated.

4. The hourly urinary output was recognized as an effective measure of the adequacy of fluid replacement.

5. The necessity for rapid administration of proper fluids immediately after the burning incident was recognized.

6. Evans, Purnell, and associates emphasized need for caution in the infusion of calculated amounts of fluids to patients over fifty years of age and also to patients burned in excess of 50 per cent of the body surface.

The practicality of this program of replacement therapy, based upon sound experiment, caused it to be widely applied during the past few years.

Recently the experience of the Surgical Research Unit at Brooke Army Hospital has been popularized throughout the country.[5,6] Their immediate management of severely burned patients calls for replacement therapy with colloid materials in the amount of 0.5 cc. per 1/100 (1 per cent) of body surface burned per kilogram of weight, electrolyte-containing solutions in amounts of 1.5 cc. per 1/100 (1 per cent) of body surface burned per kilogram of weight, and 1,000 to 1,500 cc. of dextrose in water to cover insensible loss. This total amount of fluid is recommended for the first twenty-four-hour period, and roughly one-half of this amount during the second twenty-four-hour period.

Recent experience at the Minneapolis General Hospital and the University of Minesota Hospitals has substantiated the adequacy and effectiveness of the planned replacement program of Evans and Purnell. When small children and patients over fifty-five to sixty years of age have received electrolyte-solution replacement according to the regimen of the Brooke General Army Unit (1.5 cc. per 1 per cent burned per kilogram), pulmonary edema has been a disturbing complication in certain instances. However, the importance of using sodium chloride to some degree in the initial replacement therapy was classically demonstrated recently at the Minneapolis General Hospital.

For several years prior to 1955, during a study of fluid and electrolyte changes in patients with burns covering more than 30 per cent of their body surface, patients at the General Hospital received only plasma and dextrose solution during the first twenty-four hours postburn. Serum concentrations of sodium, chloride, potassium, carbon dioxide, and proteins were obtained daily and evaluated against urinary excretions of these materials. Quantities of fluid and colloid to be replaced were determined by a formula of 1 cc.

TABLE I. WATER INTOXICATION FROM INITIAL IMBALANCE IN REPLACEMENT THERAPY
Patient with 80 per cent Body Burn at Minneapolis General Hospital

Patient: Wt., 57 kg. Age, +18 yr.	Admitted: July 15, 1955 45 min. after 80% burn from explosion in home	
Calculated intake for first 24 hours:	(Evans Formula)	
Colloid	57×50×1=	2,850 cc.
Electrolyte	57×50×1=	2,850 cc.
Insensible loss		2,000 cc.
	Total	7,700 cc.
Replacement therapy received for first 24 hours, calculated according to study program:		
Plasma (colloid)		4,325 cc.
Dextrose 5 per cent in water		4,000 cc.
	Total	8,325 cc.
Urine output in first 24 hours		1,650 cc.
Chemistries 24 hours after burning:		
Sodium		110 mEq./liter
Chloride		75 mEq./liter
Potassium		3 mEq./liter
Patient was irrational with severe water intoxication at this point (note sodium of 110)		
Replacement therapy for second 24 hours:		
Plasma		500 cc.
Dextrose in water		4,800 cc.
Late in day sodium chloride was given as hypertonic solution, 388 mEq. or 22.5 gm. of NaCl		
	Total	5,300 cc.
Urine output in second 24 hours		2,950 cc.
Chemistries 48 hours after burning:		
Sodium		135 mEq./liter
Chloride		94 mEq./liter
Carbon dioxide		27 mEq./liter
Patient recovered from water intoxication (cerebral edema) by 60 hours after burn		

plasma per 1 per cent of surface burned per kilogram weight during the first twenty-four hours and an equal amount of dextrose in water in the same period of time. Sodium and chloride replacement during the second and third postburn days was determined by the serum concentrations prevailing twenty-four hours after the burning accident.

A young woman, aged eighteen, was admitted with an 80 per cent third-degree burn, arriving in the hospital forty-five minutes after her accident. Table I details the replacement therapy she received during the first forty-eight hours. According to the formula of the study program, she received 4,325 cc. of plasma and 4,000 cc. of dextrose (5 per cent) in water. Urinary output for the twenty-four-hour period was 1,650 cc.

Twenty-four hours after arrival in the hospital the patient was completely irrational and difficult to manage; the serum sodium at this time was 110 mEq. per liter, and the serum chloride was 75 mEq. per liter. The patient was in a severe state of "water intoxication." Such a condition of water logging of somatic cells in all parts of the body, due to the severe degree of hyponatremia and hypotonicity of circulating plasma and interstitial fluid, is one of the most serious electrolyte disturbances encountered by the human body. Darrow and Yannet first focused attention on this phenomenon, and many investigators have subsequently confirmed it.[7] Water moves into the cells in the face of lower sodium levels of the extracellular fluid, and it makes no difference whether dilution of the extracellular space occurs from addition of inordinate quantities of water or subtraction of sodium; the end-result is the same. The balance of intracellular water with extracellular water is governed by the concentration of extracellular sodium at any given moment. Severe central nervous system disturbances are always present in this condition, and convulsions and seizures frequently occur. Unless the severe sodium deficit is corrected immediately with hypertonic salt solution, death follows quickly. Late in the second day of admission, this patient received 388 mEq. of sodium (22.5 gm. of sodium chloride) rapidly as a hypertonic solution, and the serum sodium forty-eight hours after burning was then 135 mEq. per liter. Twelve hours later, by the sixtieth postburn hour, this patient was more rational and her sensorium was clearing.

It is obvious that an attempt to prevent pulmonary edema by withholding sodium under these circumstances is fraught with great hazard. With excessive loss of colloid and fluid from the body through burned skin and into large blebs, and with extensive translocation of fluids from the circulatory compartment into the interstitial

compartment, large quantities of fluid must immediately be replaced to the burned patient. Under these pathologic conditions strict maintenance of accepted normal valves for certain electrolytes

1. COLLOID (1.0 x 70 x 40 = 2800 c.c.) BLOOD — 1000 c.c. / PLASMA — 1800 c.c.

2. ELECTROLYTE (1.0 x 70 x 40 = 2800 cc.) 5% GLUCOSE IN SALINE SATISFACTORY

3. D5W — 1500 c.c.

7,100 c.c. Total Replacement

1st 8 HOURS (1/2)		2nd 8 HOURS	3rd 8 HOURS
1800 cc	1800 cc	1800 cc	1800 cc
1. Saline 1000 cc.	1. Saline 1000 cc.	1. D5W 1500 cc.	1. Saline 1000 cc.
2. BLOOD 500 cc.	2. D5W 500 cc.	2. BLOOD 500 cc.	2. D5W 500 cc.
3. Plasma 500 c.c.	3 Plasma 500 cc.		Total 7500 c.c.

Fig. 1. Example of basic replacement therapy in a man weighing 70 kilograms suffering from a 40 per cent burn.

may be injurious to the patient. Conversely, however, obviously severe distortions of the electrolyte pattern must be prevented, as exemplified above. Carl Moyer has aptly stated this problem and concept in a recent monograph:

"Another aspect of body fluids about which little is known, and which pertains especially to therapeutics is the peculiarities of the volume, the concentration and the composition that are most conducive to recovery from illness. At present it is assumed that, in those who are ill, the restoration or maintenance of the values which obtain during health is most conducive to recovery. This assumption is apt to be untrue in many instances. In other words, it is possible that during illness certain deviations from normal of the milieu intérieur may be more conducive to the restoration of a feeling of well-being than the maintenance of, or restitution to, normality."[8]

This concept applies significantly, I believe, to patients with serious third-degree burns. Our aim regarding initial replacement therapy probably should be to: (1) compensate for the large abnormal losses and translocation of circulating fluid, electrolyte, and protein, (2) prevent hyponatremia and undue concentration of the red cell mass, and (3) maintain the patient at a slightly reduced level of serum sodium tending to prevent pulmonary edema. (Since many burned patients suffer a greater or less degree of tracheal bronchial irritation from hot gases and therefore are predisposed to pulmonary edema, the latter consideration seems important to me for optimum management of these serious cases). In our experience the Evans formula, as originally published, has guided our early replacement therapy most adequately and safely. If we change it at all, we shade the electrolyte replacement downward slightly. Therefore, our basic replacement therapy for adults is as follows: colloid—1 cc. per 1 per cent burned per kilogram weight (one-third to one-half of this amount as whole blood); electrolyte—0.75 to 1.0 cc. per 1 per cent burned per kilogram weight, and dextrose in water—1,000 to 2,000 cc. Figure 1 demonstrates the rate of replacement for the first twenty-four hours after burn.

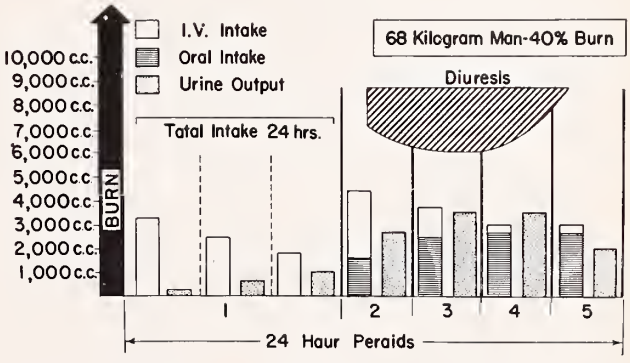


Fig. 2. Replacement therapy in burns.

Period of Diuresis

Data from the Minneapolis General Hospital reveal that the diuresis resulting from the mobilization of the extensive interstitial edema fluid into the circulating blood usually begins about the thirtieth or fortieth hour after the burn trauma. This mechanism of bodily adjustment must be fully appreciated, and administered fluids reduced in amount on the second and subsequent days after burning, or hypervolemia and pulmonary edema can result. Figure 2 portrays the relationship between administered fluid, urinary output, and diuresis in a patient at General Hospital. Note that urinary output continually increased in this man up to the third and the fourth day after burn, while the fluid intake was progressively decreased. By the fifth day after burn this patient was well stabilized on oral intake of food and fluids, with an occasional unit of whole blood administered intravenously.

The most satisfactory gauge for the adequacy of fluid replacement during the first few days after the burning incident is an hourly recording of urinary output. This method has been eminently successful in our hands, and other authors report

similar successes. There is a general consensus among authors that fluid replacement cannot safely be determined by elevations in serum hemoglobin and hematocrit values. With an adequate urinary flow, the hemoglobin usually does not rise above a level of 18 to 19 gm. per 100 cc. even during the period of severest translocation of circulating fluid out of the vascular compartment.

On occasion, undue delay in starting replacement therapy to the seriously burned patient will jeopardize his chances for survival since severe hypovolemia and shock may be present. However, if the burned patient is quickly mobilized to a hospital for treatment, and if fluid therapy is started immediately, an adequate hourly urinary output can usually be maintained. A word of caution must be spoken here, however, regarding the occasional patient who has occult renal pathology tending to alter markedly his response to fluid and electrolyte replacement.

We must always be alert for the possibility that a patient has been exposed to some toxic material (possibly carbon tetrachloride from fire extinguishers) shortly before or at the time of the burning accident. A recent experience at the Minneapolis General Hospital with a man, aged twenty-five, emphasized the necessity of careful assessment of these patients. This young man was burned while under the influence of alcohol, a lighted cigarette apparently had ignited the couch upon which he was lying. The usual program of fluid replacement was instituted immediately upon arrival of the patient at the hospital (he was under treatment thirty-five minutes after being burned) and for the first few days his urinary output was adequate. However, on the fourth day postburn the patient became oliguric and tissue edema increased to an alarming extent. Muscular contractures and twitchings were noted and serum calcium determinations indicated a severe state of hypocalcemia. Shortly thereafter the patient responded to intravenous calcium therapy, but then developed severe hypertension. His blood pressure persisted around 220 mm. of mercury systolic and 110 to 120 mm. of mercury disastolic.

Additional detailed history obtained from the patient's wife indicated that he had been treated for an obscure, mild renal disease during service with the army. It was now apparent that this patient was suffering from renal damage probably in the nature of an old glomerulonephritis and that his response to the 35 per cent body burn (mostly deep 2nd degree) was completely out of proportion to the extent and depth of the burn.

The patient responded to a restricted fluid intake and his kidneys subsequently resumed normal function. There was, however, a period of several days following resumption of renal function when the urine was grossly bloody, and proteinuria was present. The patient slowly recovered although his course was further complicated by perforation of a gastric ulcer which necessitated laparotomy and closure of the stomach.

If our initially planned fluid and electrolyte therapy for the severely burned patient does not result in an adequate urinary output by the end of the first twenty-four hours, we can assume that fluid replacement is lagging behind bodily needs in terms of edema and excessive losses. Increasing the intravenous intake of fluid and plasma will usually correct the deficit and an adequate urinary output will result. However, if the initial urine output is low, and the patient does not enter the phase of diuresis by the end of the third or fourth day postburn, we must be alerted to the possibility of renal shutdown. This may be the result of stress adversely affecting already diseased kidneys (as in the present example), or "lower nephron" syndrome secondary to transfusion reaction. Under these latter circumstances, fluids from this point onward must be strictly limited or severe waterlogging will result.

Further, it has been my experience that patients who are inebriated at the time of their burn trauma respond poorly to therapy during the immediate postburn period. Recently a problem of "true" (unexplained) renal shutdown occurred in a fifty-nine-year-old white woman treated at the Minneapolis General Hospital following a 55 per cent third degree body burn, sustained during a period of acute alcoholism. In spite of an adequate fluid intake during the first few days the urinary output dropped from 290 cc. on the first day postburn to 70 cc. on the third day postburn (urine output ranged from 30 to 90 cc. daily until death). By the ninth day postburn, the patient still had not diuresed and generalized edema was a serious problem. The serum sodium was maintained near 135 mEq. per liter until the fifth day postburn when it fell to 125 mEq. per liter for a period of several days. The patient

expired rather suddenly on the ninth day of hospitalization and, as is so commonly noted under these circumstances, no specific cause of death was found. She responded well to the open treatment of her burns and during most of her hospital stay oral temperatures ranged from 98° to 99° Fahrenheit. At no time did we suspect or find evidence of bacteremia. Histologic sections of the kidneys removed at autopsy failed to reveal any specific pathology that could be indicated with regard to the failure of these organs to undergo a diuresis and function properly. Under these circumstances, a transfusion reaction cannot be absolutely ruled out, but such seems unlikely in this particular patient.

Undoubtedly an occasional patient may demonstrate renal failure without apparent cause (as in the latter example) but the majority of early deaths following severe burns can be attributed to inadequate replacement therapy; inadequate in terms of quantity and composition of the "balanced replacement."

Good experimental evidence supports the apparent clinical benefits of whole blood transfusions in the therapy of severely burned patients. In 1952 Quinby and Cope published studies of red cell destruction during burn trauma, assessed through the use of tagged red blood cells made radioactive with radioactive iron and chromate. They reported destruction of 7 per cent to 10 per cent of the red cell mass in a patient suffering from a 35 per cent full-thickness burn. However, it must be recognized that the loss of red cell mass is small compared with the more massive losses of plasma.

In the absence of blood tranfusions early in the postburn period, an anemia of greater or less severity results. Use of whole blood to account for one-third to one-half of the initial colloid requirement provides early compensation for loss of red cell mass as well as combating shock. We have never seen untoward hemoconcentration as a result of this therapy.

In the latter stages of therapy, during reconstructive surgery, whole blood is absolutely vital if hemoglobin is to be maintained near optimum levels. The importance of an adequate red cell mass to the healing of extensive wounds is well known. In adult patients free of cardiac complications, the hemoglobin should approach 15 gm. per 100 cc. assessed during an adequate state of hydration.

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Editorials

John F. Briggs, M.D.
Arthur H. Wells, M.D.
Henry G. Moehring, M.D.

R. R. ROSELL RETIRES

On the first of the year, R. R. Rosell, executive secretary of the Minnesota State Medical Association, will retire after many years of outstanding service not only to the State Association, but to the organized profession of the North Central states.



Since he became executive secretary in 1938, succeeding Dr. E. A. Meyerding, it can be truly said that Mr. Rosell, best known to his many friends as "Rosie," has been the center of the Association's activities.

Born in Minneapolis, Mr. Rosell attended the public schools and was graduated from the Engineering School of the University of Minnesota just before the outbreak of World War I. He accepted a commission with the Army Engineers when the United States entered the war and spent most of his time in service helping to run a munitions plant on the East Coast. He had planned to return to engineering after the war, but his capacity for organization had been noted, and he went to work instead in the newly created program for the rehabilitation of veterans. Under the direction of Dr. William H. Dunwoody of Minneapolis, he travelled all over the country in his new job.

Later, Mr. Rosell established a rehabilitation program for the Hennepin County Tuberculosis Association. Later still he was associated with the Minnesota Public Health Association, the Christmas Seal organization of the state, at a time when this organization and the Minnesota State Medical Association were under the joint executive direction of Dr. E. A. Meyerding.

In 1930, Mr. Rosell left Minnesota for several years to carry on a nutrition program of national scope under the sponsorship of the milling industry and the American Medical Association.

In 1935, he returned to Minnesota and for a brief period was a regional director of the WPA before he returned to the State Medical Association in 1936 as Assistant Executive Secretary in association with Dr. Meyerding. In 1938, upon the resignation of Dr. Meyerding, Mr. Rosell became Executive Secretary, one of the early lay secretaries of the state medical associations.

The employment of full-time lay executive secretaries for state medical associations and for some of the larger county medical societies has become more usual during the past two decades and has offered these lay secretaries the opportunity to exert considerable influence on medical organizations and in various activities having to do with public welfare. Mr. Rosell was well suited to do just this and proved his ability as an administrator in the handling not only of lay individuals but of members of the medical profession who are proverbially known as individualists in the extreme.

Back in 1927, under the presidency of Dr. William F. Braasch of Rochester, the State Association officers, notably Dr. Braasch and Dr. Charles B. Wright of Minneapolis, became concerned about the social and economic outlook for medicine and invited representatives of the medical associations of Wisconsin, Iowa, North Dakota, and South Dakota to meet in the Twin Cities with officers of the Minnesota State Medical Association to discuss informally such subjects as

medical costs, distribution of physicians, encroachment of government on medical practice, and the like. This conference became known as the Northwest Medical Conference and met yearly in St. Paul until 1936, when its membership having spread to include representatives of state associations in the East and South, Chicago was selected as its meeting place, and Mr. Rosell continued to act as secretary.

In 1940, the name of the conference was changed to the National Conference on Medical Services. Dr. A. W. Adson and Dr. W. L. Burnap were ardent advocates in the National Conference of a stronger national legislation policy and the establishment of an office of the American Medical Association in Washington. They seemed to make little headway with the idea and, in 1942, established what was called the North Central Medical Conference with representatives from the medical associations of Wisconsin, North Dakota, South Dakota, Iowa, and Nebraska, as well as Minnesota, which met annually in St. Paul with Mr. Rosell as secretary. Action of this group favoring the establishment of an AMA office in Washington, transmitted to the National Council on Medical Services, led to the setting up of a Washington office under Dr. Joseph Lawrence in 1944.

Mr. Rosell has been the executive secretary of the North Central Medical Conference from its inception in 1942 until 1958 and has done a splendid job in managing programs and entertainment for the visitors.

All this activity was in addition to his duties as Executive Secretary of the Minnesota State Medical Association, which in itself is a strenuous job. For his outstanding service to the Association over the years, "Rosie" was presented with a well-deserved citation at the banquet held in connection with the annual meeting in Minneapolis last May.

In spite of a coronary attack sustained while attending the AMA meeting in New York in the summer of 1957, "Rosie" again carried on following a brief vacation.

The first Mrs. Rosell died in the late forties. Their son, Rufus Roger, Jr., lives in Minneapolis. In 1951, "Rosie" married Dorothy Stuber and they live at 2138 S. Rosewood Lane in St. Paul. It is the wish of his many friends that the Rosells will have many years of a happy and less strenuous existence allotted to them.

CARL B. DRAKE, M.D.

ROTUNDOPHILIA

If you're looking for editorial comment about reducing diets or the need therefore, skip this. This has to do with round numbers.

We have run into vigorous objections to imprecise statistics, but in general we hold with the school of round numbers. Much can be said on each side. For example, the proponents of accurate numerical quotations (79.98 per cent of patients . . . rather than 8 out of 10) tell of the hen who observed time and again that the appearance of a *man* was followed by her finding corn on the ground outside the hen house. Being a scientific type of hen, she tabulated her results. In truth, for 999 times in succession *man* appeared and Lo, there was corn for the hen! Being also addicted to the scientific tendency to stick to actual numbers, and the avian and human tendency to gather statistics in rotund groups, like an even thousand, she waited for the 1000th appearance of *man*. It came. She went out to verify the presence of corn, but instead, *man* seized her and wrung her neck for his supper. This is the sort of thing that would discourage the rounding off of numerical data. Further, the proponents of precision, *vs.* rotundity, point out that Methuselah's age at death (969 years) is ponderously convincing because of its precision—no "almost a thousand years" for them.

On the other hand, who hasn't met the engineering student whose survey of tunnels in a mine drift didn't read "length 143 feet and 9 inches" when everyone except, hopefully, the prof knew that this precision was merely putting a badge of pseudo-accuracy on a canny guess? This is not to say that the precise statistician is always veneering his numbers with a specious accuracy, but there are times when results to the Nth decimal place give the practical man such an impression.

And so back to our original statement that, in general, round numbers would seem to suffice for most clinical statistics, if for no other reason than that "three-fourths" or even "75 per cent," communicates a thought much more easily to most people than does "73.68 per cent."

H.G.M.

ADRENOCORTICAL STEROIDS

Those of us who have been privileged to practice the art of medicine over the past two decades have witnessed advances in the field of therapeutics which our forebears would have regarded as miraculous. Some of these advances, particularly the antibiotics, have been curative. Others, such as the adrenocortical steroids, have been suppressive or "rehabilitation" agents. These compounds have permitted many whose activity has been limited by arthritis or severe dermatologic and allergic conditions to return to gainful employment or active retirement.

Ten years ago, Hench and his co-workers at the Mayo Clinic demonstrated the marked anti-inflammatory activity of cortisone in the treatment of rheumatoid arthritis and rheumatic fever. Since that time, we have utilized hydrocortisone, prednisone, prednisolone, and more recently methylprednisolone and triamcinolone. Perhaps then, at the end of this first "adrenocortical decade," we should take off our rose-tinted glasses and look objectively at these highly potent therapeutic compounds with their edge of physiologic side effects.

The search for new adrenocortical steroids, by chemical manipulation within the ring structure, has become a highly specialized and aggressive form of research. Each year, large numbers of such compounds are produced and screened within the laboratories. What screens are used to indicate the potentialities of a new corticosteroid? Briefly, and avoiding detail, one might say that the following criteria are basic in such an investigation.

	Screen		*Ideal*
Major	Anti-inflammatory activity		High
	Sodium retention		Absent
Minor	Diabetogenic Effects	Side Effects	Absent
	Catabolic Activity		Absent
	Adrenocortical Suppression		Absent
	Ulcerogenic Activity		Absent

Of the above, there can be no doubt that a high degree of anti-inflammatory activity combined with minimal or absent sodium retention is mandatory. The other side effects are only of importance if these preceding criteria are met. Let us now assume that a compound has successfully negotiated the laboratory's screening procedures and has been shown experimentally to have a high degree of anti-inflammatory activity with minimal or absent side effects as indicated by biological screening. Our next efforts must then be directed toward its clinical investigation. Here many problems arise for we must face the fact that man is not a laboratory animal. The results of animal experimentation are, at the best, only a guide and should be regarded as such. Many compounds which have created enthusiasm in the laboratory have been failures when applied clinically.

How long does it take to evaluate thoroughly a corticosteroid in the clinic? A year, two years, perhaps even longer? None of us can firmly answer that question. To show efficacy is one thing, to determine ultimate clinical acceptability is another.

How then do the new corticosteroids compare with the parent compounds cortisone and hydrocortisone? DiRaimondo and Forsham recently indicated this in their table published in *Metabolism*, January, 1958, as follows:

Drug	*Anti-inflammatory Effect*	*Sodium-retaining Propensity*
Cortisone	0.8	1.0
Hydrocortisone	1.0	1.0
Prednisone	2.5	0.8
Prednisolone	3.0	0.8
Triamcinolone	3.0	0.0
Methylprednisolone	4.0	0.0

One has only to review this table to see that over this past decade we have moved forward a long way. We now have available a corticosteroid with four times the anti-inflammatory ability of the parent compound hydrocortisone. At the same time, the sodium-retaining propensity has been removed so that long-term therapy, as far as these criteria are concerned, is now a reality.

JOHN J. PEPPER, M.D.

This is the first of four editorials on steroid therapy.

NUCLEAR POWER IS SAFE
Electrical Industry

"The place I'd set up my cot and go to sleep with absolute confidence would be on top of a Hanford reactor," Dr. Norman Hilberry, atomic scientist, said recently.

"A nuclear reactor and an atomic bomb are two very different things. The possibility of a bomb-like nuclear explosion occurring in a reactor is so remote as to be essentially non-existent," Atomic Energy Commission experts say.

"There is less than one chance in 50,000,000 of getting killed in any year in a nuclear reactor accident," says the AEC. Compare this with the odds

of one chance in 5,000 of death in an automobile accident in the course of a year.

Since the discovery of nuclear energy, exploring and improving its safe use as a source of electric power has been an everyday activity of the electric industry. More than $400 million is now invested by electric companies all over the nation in the building of fourteen nuclear power reactors of many types and designs.

The Atomic Energy Commission reports that "nuclear reactors have been operated since December 2, 1942, with a safety record better than that of other industry." A remarkable record of employe safety has been chalked up. In a total of 18,000,000 man-hours of work at nuclear reactor locations, there have been "no accidents involving contamination of off-site property or radiation injury sufficiently serious to cause any lost time of personnel."

Safety is always a first consideration of the electric industry. Under the strict regulation by the Atomic Energy Commission, safety is being "designed into" nuclear power plants. Every possible danger is being anticipated in the building of nuclear reactors.

Every electric company building a reactor analyzes its design and operation in every detail, always keeping safety in mind.

DON UNDERWOOD

THE PASSENGER PIGEON

When the first settlers came to Minnesota, the passenger pigeon was a common, indeed, a phenomenally abundant, summer resident in this part of the country. This bird should not be confused with the homing or carrier pigeon, which is a variety of the domestic pigeon, or with the mourning dove, which is a smaller bird by from four to six inches and which is still an abundant summer resident in Minnesota and throughout most of North America.

The wild pigeon, as it was called, arrived in immense flocks early in the spring and again in the autumn. Competent observers have estimated the flocks in terms of millions and even as high as two billion birds. Its nesting sites or roosts were almost always in extensive areas of hardwood where food was abundant. Normally the food of the pigeon was acorns, nuts, seeds of elms and maples, berries, weed seeds, caterpillars, grasshoppers, angleworms, and snails. The passenger pigeon was a gregarious bird. It travelled in flocks, it fed in flocks, it nested in flocks, it was exterminated in flocks. Pigeon roosts often covered several hundred or even thousands of acres. It was not uncommon to find ten or more nests in a single tree and cases are cited of trees actually collapsing from the sheer weight of the numerous nests.

At the time Minnesota became the thirty-second state in the Union, the process of extermination of the passenger pigeon was at its height. As the woods and prairies were converted into cultivated fields and its natural food supplies were depleted, the bird became a veritable pest to the farmers during both seeding and harvest. It is small wonder that the farmers, who saw their precious seed picked up faster than they could sow it and who watched the pigeons roll over the fields in droves, taking most of the harvest, used every possible means to protect themselves against the advancing hordes. Both the adults and squabs were highly prized delicacies in the eastern markets. The squabs could be easily obtained by jarring a small tree, felling a larger tree, or even setting fires below the nesting trees. The nest was a fragile structure, a mere platform of twigs loosely put together. Only one egg was laid, though the pigeon commonly nested twice in the season and occasionally three or four times. Shipping records reveal consignments of birds both by water and by rail that totaled close to two million birds in a single summer.

By the time the efforts of naturalists to bring an end to this slaughter had become effective in protective legislation, the remnants of the pigeon flocks were too far decimated to cope with the forces of nature, and, with almost dramatic suddenness, the passenger pigeon had disappeared from among American avifauna. Dr. Roberts, in *The Birds of Minnesota,* gives 1895 as the date for the last reliable record in the state of a nesting bird, one taken near Minneapolis. Elsewhere, isolated cases of passenger pigeons were reported sporadically during the next decade. A few captive birds were unable to rear sufficient young and the small flock steadily decreased. The last surviving bird of the once spectacular hordes died on September 1, 1914, in a Cincinnati zoo.

The disappearance of the passenger pigeon has been the subject of much controversy among different groups. From the maze of opinion, theory, and emotion, it is possible to distinguish several contributory factors. The extent to which each hastened the final disappearance of the pas-

senger pigeon cannot be determined with certainty but the combination of them all brought doom to one of America's and Minnesota's beautiful and valuable birds. Undoubtedly, man's warfare upon the bird on its nesting sites, coupled with the bird's gregarious habits and single-egg brood proved to be an insuperable handicap in the way of survival. The cutting of the forests and the destruction of its natural food and nesting sites were potent factors in its disappearance, and disease and the elements of the weather may also have contributed to the speed with which it vanished.

Legislation alone will not save a species from extinction and often comes too late to be effective. The conservation of our natural resources must be the concern of every public-minded citizen. As we in Minnesota stand on the threshold of a second hundred years, it is to be hoped that we shall learn from the failures of the past to exercise a more faithful stewardship of the bounty that is ours.

Sister St. Mark Wirtz, M.S.

ECONOMIC CONSEQUENCES OF TELEVISION TEACHING

Earlier articles in this series have shown that teaching by television is highly effective teaching indeed. The facts that by 1970 we shall have twice as many students in our classes but that it is impossible to double the number of qualified teachers within the next twelve years have also been noted. There is an obvious relationship between these matters. If, as is entirely possible, one teacher, by television, can teach thousands of students without loss of educational attainment on the part of the students, then we may be on the way toward solving the present critical shortage of teachers and the even more menacing future shortage.

It should be noted, however, that educational television is by no means a panacea for all our educational problems. To begin with, an educational station has only about 100 hours a week at its disposal for educational purposes. This time must be divided between pre-school children, all twelve grades, the needs of colleges and universities and the demands for adult education. It is obvious that the available time on these stations will have to be very carefully budgeted to serve the most critical needs. In Pittsburgh, for example, all available time on the educational television station has long since been taken up. The nonprofit corporation which operates the station is now applying for an unused UHF channel which, in effect, will put a second educational television station into the Pittsburgh area simply to take care of the tremendous demands for educational time. Similar demands will doubtless soon be heard in Chicago, St. Louis and the Twin Cities.

Under these circumstances, it should be obvious that educational television is not a device for the displacement or replacement of teachers. We will need to keep all the teachers we have and to recruit all we can get, *plus* maximum use of educational television, if we are simply to maintain our present standards of education, let alone improve them.

In certain subject areas, however, the role of the educational television station is vital. For example, some 25 per cent of all the high schools in the United States offer no courses in physics, chemistry or mathematics beyond the ninth grade level. The reason for this is that the limited supply of capable physicists, chemists and mathematicians is usually snapped up by industry at salaries far beyond the reach of the high schools. This, in turn, may mean that there will be even fewer physicists and chemists in the future than we have now. Yet, in Pittsburgh, one highly gifted teacher of physics is now serving, by television, some thirty-one different school districts simultaneously. The students who take the course by television do better work, as measured by examination, than those studying in the conventional way. Moreover, the students apparently enjoy the experience and enrollments for the second year of this experiment have far exceeded the expectations of the educators. The teacher, Dr. Harvey White, expresses himself as more than satisfied with the experiment. White, incidentally, is paid $15,000 a year for teaching on television. This figure is noteworthy because it makes White the highest salaried school teacher in the United States. This, in turn, is important because with the cost of the television time, White's salary, the cost of all materials, study guides and all other costs, the total bill to each of the school districts averages less than $2000 a year. This figure is about one-third the cost of supplying a merely average teacher for this subject, *if* it were possible to find such a teacher.

A similar calculation for the cost of supplying foreign language instruction by television for the elementary schools in Ramsey and Hennepin

Counties, which included the cost of the television time, an above average salary for the teacher, plus all other costs, resulted in a figure of something under seventeen cents per lesson, per school. Obviously, this is high quality instruction at almost negligible cost. The impact of this on taxpayer groups is obvious.

In conclusion, then, educational television can and should be used to supply educational needs which cannot be met so well any other way and which, in some cases, cannot be met at all in any other way. It is important to note that the cost of this instruction is extremely low and that the quality of the instruction can be very high indeed. An educational television station thus becomes a most valuable economic asset to any community which it can serve.

JOHN C. SCHWARZWALDER

SCHOOL HEARING PROGRAMS

Early discovery of hearing loss through audiometric testing is the heart of school hearing conservation programs described by Hayes A. Newby, Ph.D., of Stanford University, in a twelve-page article in the September issue of *Hearing News*, American Hearing Society publication.

Other primary facets of a hearing conservation program include medical follow-up of children having remediable hearing losses, and special education to enable those with permanent auditory impairment to obtain maximum benefit from their schooling.

Incidence of hearing loss is estimated at from 5 to 10 per cent of the school population. Of that number many will respond to medical treatment, while only about 1 per cent of the children will have hearing loss of a handicapping nature.

Dr. Newby points out that implications of hearing conservation programs go far beyond the immediate gains to the individual child in discovering and handling his hearing problem. Early discovery of hearing loss and follow up, as indicated, is "economically advantageous to a community and to the country as a whole."

Reprints of "School Hearing Conservation Programs" are available at 35 cents a copy. Write: American Hearing Society, 1800 H St., N.W., Washington 6, D. C.

COSTS OF LIVING VERSUS OTHER COSTS

Living costs have gone up an average of 105 per cent in the twenty years between 1938 and 1958, according to U. S. Government Cost-of-Living Index. This means that one would have to pay $205 now for what would have cost $100 in 1938.

Other costs are indicated as follows. Rent has gone up 60 per cent; doctors' fees, 84 per cent; men's clothing, 110 per cent; automobiles, 125 per cent; food costs, 151 per cent; baby shoes, 171 per cent; men's haircuts, 206 per cent; hospital costs, 300 per cent. Most of this is attributed to labor costs.

BRONCHO-PULMONARY SEGMENTAL ANATOMY AND BRONCHOGRAPHY

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President's Letter

PROGRESS REPORT—CENTENNIAL YEAR

There is an old saying "Happy is the Nation without a history." Medicine in Minnesota had a history this year but it is not unhappy about it. Last fall the Asian influenza scare appeared, but with the aid of Dr. Robert Barr of the State Board of Health, the hazards were easily surmounted. There was no increase in government medicine in this state as a result of the wide vaccination program, and the influenza epidemic was relatively well controlled. Poliomyelitis this year was mild, mostly as a result of the intensive vaccination effort of two years ago and the continuing effort of the doctors of the State to maintain and widen the immunization of Minnesota citizens. At the State Fair in August, the State Medical Association established a booth for first immunization doses against polio in adults. That this was successful is due to the efforts of Harold Brunn of the State Office and the manning of the booth by members of the Minnesota Academy of General Practice with the aid of volunteer registered nurses and Hennepin County group of the Council of Jewish Women.

The annual meeting of the Association in May was successful, especially in that there was a record number of intensely interesting scientific exhibits. Immediately after our annual session was the Tenth Anniversary Meeting of the World Health Organization, the first in the United States. According to national authorities, the hospitality of the people of Minnesota was an outstanding contribution to international goodwill and, in fact, is said to have changed the attitude of whole nations in the middle and far East toward the United States.

In October, the North Central Conference of Medical Associations met in Minneapolis. This is an annual event, usually meeting in St. Paul. At this conference, one half the session was devoted to voluntary health insurance. This type of insurance seems at this time to be the best answer to the proposals moving toward government control of medicine. Insurance programs are having their troubles, especially major medical policies which are running into over-usage and occasionally exhorbitant medical bills. If these voluntary insurance policies are confronted with too exaggerated hospital and medical expenses, they will be priced out of the market and the almost inevitable result will be the substitution of federal control of hospital and medical costs with all that that implies.

Throughout the year there have been hearings by the Interim Committee of the Legislature on osteopathic practice. One might say that these have been interesting.

Early December brought the Clinical Meeting of the AMA to the State. The last previous time the AMA held a meeting in Minneapolis was in 1927.

One unhappy event occurs at the end of this year. R. R. Rosell is retiring as Executive Secretary of the Minnesota State Medical Association. He has been the prototype of the good executive secretary and has set the standard for that position throughout much of the country. All of us who have known him and have watched him work have not only the utmost respect for him, but the deepest fondness personally. We shall all miss him, and as he retires, our best wishes follow him for an active and happy life.

Harold Brunn has been promoted from Assistant to Executive Secretary to take office the first of January, 1959. He will be a worthy successor to Mr. Rosell. To them and to the whole staff we owe much.

And now, in closing this last President's letter of 1958, I wish to express the appreciation of the honor given me. It has been a broadening and, indeed, an exciting experience, one never to be forgotten. We have met many problems, solved a few and foresee many more. It is only the co-operation of many, many physicians that makes medicine the respected, outstanding profession it is today and the Minnesota State Medical Association, the spokesman and co-ordinator for the profession.

Horatio B. Sweetser

President, Minnesota State Medical Association

Medical Economics

Edited by the
Committee on Medical Economics,
Minnesota State Medical Association
George Earl, M.D., Chairman

RECORD ENROLLMENT IN MEDICAL SCHOOLS CITED

A record total of 29,473 students were enrolled in American Medical Colleges in 1957-58.

Major construction in the planning, beginning, or completion stages costing 47 million dollars was reported by sixty of the eighty-five operating medical schools.

Forty-nine schools reported major developments and changes in administrative organization, methods of student selection, curriculum, and financing.

As estimated, the sum of 275 million dollars was spent by the medical schools in 1957-58, an increase of 13 per cent over the preceding year.

These were among the many facts and figures in the fifty-eighth annual report on medical education by the American Medical Association's Council on Medical Education and Hospitals. The ninety-page report appears in the November 15 issue of the *Journal of the American Medical Association.*

The report illustrates some of the changes and developments being made in medical schools to meet the changing medical needs of the American people.

It also noted the AMA's continuing support in developing additional facilities for basic medical education. "The increasing population together with various other facets of the shifting (population) pattern obviously indicate the need for constantly increasing the number of physicians," the report said.

Facility—Curriculum Revisions Necessary

This means that existing medical schools must consider expanding their facilities, and institutions of higher education without medical education programs need to give serious consideration to the development of medical programs.

Major developments in curriculum and teaching methods were reported at several schools. These include a plan at Duke University to produce physicians who are also skilled medical research scientists; a greater emphasis on education methods for medical teachers at the University of Buffalo, and an experimental program at the University of Pittsburgh whereby medical students may adapt their medical education to one of the specific fields of research, clinical specialities, or general practice.

Medical School Graduates Increasing

There are seventy-eight approved four-year medical schools in the United States, along with four two-year schools of basic medical sciences. In addition, three newly developing schools have provisional approval by the AMA Council and will be graduating students within the next few years. Ten years ago there were seventy-seven schools including seven two-year schools of basic medical sciences.

A total of 6,861 physicians was graduated from the seventy-eight schools in 1958, as compared with 6,796 in 1957. The record year for graduates was 1955 with 6,977.

A new record was established in 1957-58 for the number of entering freshman—8,030. The preceding year the number was 8,014, and ten years ago the number was 6,487.

The report also showed that 1,644 women were enrolled in medical schools, and 355 were graduated in 1958. Women's Medical College, Philadelphia, enrolls only women, while Dartmouth and Jefferson enroll only men.

Of the seventy-two schools reporting that the supply of cadavers used for teaching anatomy was probably adequate for the needs of first-year students, thirteen reported an insufficient supply for the more advanced students. The other thirteen reported a "frankly inadequate supply." The report urged more states to give legal recognition to individual bequests of bodies to medical schools.

Financial Aid Increased

The American Medical Education Foundation raised $984,787 from physicians for medical schools in 1957. The National Fund for Medical Education, which received its money from industry, contributed $3,078,825 to the medical schools in January, 1958.

The median annual cost of medical school to

a student, including tuition, minimum board, room, and supplies, in a private institution was $1,958. In a state-owned school, the cost was $1,395 to a resident of the state and $1,731 to a non-resident.

The median amount of money spent by a four-year school during 1957-58 was between 2.3 and 2.4 million dollars.

Enrollment Limited in State-Owned Schools

The survey of medical schools this year showed that only seven—all state-owned—limited their first-year enrollment to residents of the state in which the school was located. This is a drop of schools from the preceding year.

However, the publicly owned schools had only 4 to 9 per cent of their students from outside the state in which each school was located. As a consequence, the publicly owned schools had only one-fourth to one-fifth as many applicants as did privately owned schools, the report said.

Although the proportion of the total number of students entering classes enrolled in each kind of school was about equal, the number of students lost to medicine by poor scholarship during the first year was significantly larger in each of the past four years in publicly owned schools.

The report said the problem is that their geographic restrictions on residence limit applications by, and choice of, as many highly capable students on the part of publicly owned schools as are turned away by the geographically non-restrictive privately owned schools.

The report expressed the hope that state legislators and other public officials concerned with these matters will co-operate with university and medical school administrators "in bringing the policies restricting admissions into a more realistic and socially useful focus."

Canadian Medical Schools Flourish

The report included extensive information about Canadian Medical schools. There are twelve four-year schools, enrolling a total of 3,686 students. They graduated 828 physicians in 1958.

There are eighty-two United States citizens enrolled in the first medical year in Canadian schools as compared with four Canadians enrolled in the first-year classes of United States schools. The report pointed out that this favorable balance of seventy-eight Americans in the first medical year of Canadian schools represents the "equivalent of another United States school having a class size larger than that of twenty-eight of the United States medical schools."

WILL THE EIGHTY-SIXTH CONGRESS WRITE THE PRESCRIPTION FOR GOVERNMENT MEDICINE?

With the results of the November fourth elections now in, an analysis of their probable effect on medical legislation during the Eighty-sixth Congress convening January 7, 1959 is in order. Top-heavy Democratic majorities in both the House and Senate make policy decisions of the Democratic leadership of key importance in medical as well as all types of legislation. Equally important, the make-up of all committees will be markedly altered.

In the Senate, for instance, when the margin was forty-nine Democrats to forty-seven Republicans, Senate committees were closely divided. With the Democrats picking up a record gain of thirteen seats in the Senate, committee composition may run as much as ten to five or nine to six in favor of the majority party. (Under the Reorganization Act of 1946, each Senator is assured of two committee assignments; thus twenty-six new places have to be found on Senate committees in January.)

Legislation rarely gets to the floor for a vote unless some committee sends it there. Majority policy sometimes becomes stalled when a committee, for various reasons, finds itself in disagreement with that policy.

Selections to committee are made differently in each house and by the parties. In the Senate, the Democrats make appointments through the fifteen-man Steering Committee headed by Majority Leader Lyndon Johnson; other members are Mansfield, Hennings, Chavez, Elender, Frear, Russell, Hayden, Holland, Humphrey, Pastore, McClellan, Robertson, and Johnston (S. C.). The Republicans in the Senate use a five-man Committee on Committees that was made up in the Eighty-fifth Congress of Senators Knowland, Bricker, Saltonstall, Bridges, and Dirksen. In the House, the Democratic Committee on Committees is made up of all Democratic members of the Ways and Means Committee. The Republicans will constitute a Committee on Committees in January, made up of one member for each Republican state delegation and with House Minority Leader Martin as chairman. With this background, let's examine

the composition of committees in both houses which are most concerned with medical legislation.

House Ways and Means

A committee of major importance to physicians is the House Ways and Means Committee under Chairman Wilbur Mills (D., Ark.). Its membership for several years has been divided—fifteen Democrats to ten Republicans. In the Eighty-sixth Congress, the committee will be considering legislation that would impose, on a compulsory basis, hospitalization and medical care benefits for retired social security recipients and their dependents. The committee also is expected to consider amendments to public assistance laws which in large measure are evolving into medical programs for the indigent. Keogh legislation to permit self-employed persons to establish annuities with deferred taxes will again be considered by Ways and Means.

At least seven of the present members of the committee will not serve in the new Congress. Their loss to the committee can be attributed to one death, a decision by four not to seek re-election to the House, and defeat of two at the polls in the November fourth elections. The men who succeed these seven could shape the entire philosophy of the committee. There is a further possibility that the committee will be even more heavily Democratic; it is quite possible that it will have a line-up of seventeen or more Democrats to eight or less Republicans.

Senate Finance Committee

In the Senate, the Finance Committee is of importance to the medical profession. It is the counterpart of the Ways and Means Committee in the House. Its chairman is Senator Harry Byrd (D., Va.). At present, the committee is composed of eight Democrats and seven Republicans. It is certain that three Republican members will not serve in the Eighty-sixth Congress; two retired from the Senate, and one was defeated in the recent elections. Because of the overwhelming majority in the Senate (sixty-two to thirty-four), the Finance Committee makeup quite possibly will be changed to nine or more Democrats, to six or less Republicans.

This committee has been considered in the past to be a middle-of-the-road group. With the appointment of new members, both Republican and Democratic, this group's attitude on health legislation could be altered.

House Interstate and Foreign Commerce Committee

Another committee of importance is the House Interstate and Foreign Commerce Committee, under chairmanship of Rep. Oren Harris (D., Ark.). For several years, it has been made up of eighteen Democrats and fifteen Republicans. In the coming Congress, the committee will be considering such matters as amendments to the Hill-Burton Hospital Construction Act, federal aid to medical schools, expanded medical research programs and food and drug legislation.

Many of the present members of the committee, including the top ranking three Republicans and the only physician serving on a committee concerned with health legislation, will not serve in the next Congress. Either they did not seek re-election or they were defeated at the polls. On the Democratic side, this was true of at least two members. When Congress organizes in January, the ratio of members will be changed from the present eighteen Democrats and fifteen Republicans by adding as many as three or more Democrats, and by reducing the Republican membership by a similar number.

Senate Labor and Public Welfare Committee

According to the American Medical Association Washington Letter, a fourth important committee to physicians is the Senate Labor and Public Welfare Committee whose chairman is Senator Lister Hill (D., Ala.). This committee handles major health legislation, and in addition has jurisdiction over some veterans' matters where medical interest is involved. Its present membership is seven Democrats and six Republicans.

The top-ranking three Republican members will not serve in the Eighty-sixth Congress either because of their decision not to seek re-election or because they were defeated. Here, again, the party-line-up may be changed so that when the Senate organizes they may be one or more Democrats added to the committee membership and a similar decrease of Republic members. The philosophy of the committee could conceivably be altered with the appointment of Republicans to replace vacancies on the committee.

FORAND BILL A LABOR "MUST" FOR NEXT SESSION

A pamphlet just issued by the AFL-CIO confirms that labor's national leadership is moving the Forand bill high up on its priority list of bills it wants passed in the next session of Congress. The booklet, "Labor Looks at the Eighty-fifth Congress," is mainly a review of the last two years, but it also looks ahead. It locates the Forand bill as fourth of seventeen legislative objectives next year, declaring that labor will work for enactment, "through the social security system," of a program of "hospital, nursing home and surgical care for those receiving benefits." The booklet was prepared by the AFL-CIO's legislative department, headed by Andrew J. Biemiller, former Democratic Representative from Wisconsin.

Only objectives ranked higher on the list are "complete overhaul of the Taft-Hartley act," legislation to "safeguard unions from racketeers and from improper activities" on the part of both labor and management, and extension of the fair labor standards act and an increase of the minimum wage to $1.25 per hour.

The Forand bill would provide hospitalization and surgical care for all social security beneficiaries. Last session, it was among social security changes on which hearings were held by the House Ways and Means Committee, and was the subject of considerable discussion, but was not included in other provisions reported out by the committee. On the committee's instructions, the Department of Health, Education and Welfare is making a comprehensive study of the financing of medical care for the aged.

KEOGH BILL ACTION PLANNED

A plan of action to obtain passage next year of the Keogh bill has been approved by the executive committee of the American Thrift Assembly and presented to the Assembly's board. ATA already is at work contacting candidates for Senate and House.

ATA was formed by a number of professional groups interested in the legislation, including the AMA. The bill would allow the self-employed to defer income taxes on a certain percentage of their earnings if placed in retirement plans. The blueprint for operations next year was drawn up by a special committee appointed by ATA's executive committee. Active in the work were Dr. William J. Kennard, representing the AMA; Milton F. Lunch, National Society of Professional Engineers; Donald E. Channel, American Bar Association; Lyman Bryan, American Institute of Certified Public Accountants; and Al Payne, National Association of Real Estate Boards. In sending the proposed plan to members of ATA's board, ATA Chairman F. Joseph Donohue wrote:

> "The favorable action on the bill in the last session raises our hopes for complete success in the coming session of the Congress. The discussion of this measure on the floor of the House prior to its passage, as well as the later debate on the floor of the Senate before it was ruled 'out of order' as not 'germane' to the bill to which it was sought to be attached by way of amendment by Senator Potter, has pointed to our areas of strength and to our areas of weakness. It is on the latter we hope to concentrate."

OSTEOPATHS DROP FOUNDER'S NAME FROM CONSTITUTION

The American Osteopathic Association agreed by a 105 to 16 vote at its annual meeting in Washington to drop from its constitution the name of its founder, Dr. Andrew Taylor Still. In his presidential address, George W. Northrup, D.O., said the AOA desires to co-operate with all other agencies responsible for health services but that the solutions of AOA problems "will not be solved by placing our future in the protective custody of any other organized body." In any event, he said, medicine in general and osteopathic medicine in particular can no longer exist as "an isolated island in society."

STATE REACTIONS TO MEDICARE VARY

Two states have recently taken action regarding Medicare, one pro, one con.

Only three months after signing a new contract with the government, Oklahoma Medical Association has divorced itself from the Medicare program. Action was ascribed to free-choice abridgement and benefit cutbacks which became effective October 1. Medicare officials deprecate the withdrawal as a step based on misunderstandings.

At its annual meeting, September 20, New Hampshire Medical Society voted on the question of terminating participation in Medicare program. The decision, by a vote of 28 to 11, was to retain the program.

Predictions are that negotiations by correspondence will replace the present practice of on-the-spot bargaining sessions with state associations next year.

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SEARLE

MINNESOTA BLUE SHIELD-BLUE CROSS

Minnesota Blue Shield completed its eleventh year of operation on October 31, 1958. This fact prompted a review of the improvements in Blue Shield coverage since the program has been in operation.

Not only does the Blue Shield contract now carry allowances for many more services of doctors of medicine than it did originally, but many of the original allowances have been increased. The Plan A fee schedule has been converted from what is known as a $150 to a $200 surgical schedule, waiting periods for tonsillectomies and adenodectomies and for pre-existing conditions have been reduced from ten to nine months, and a new contract, Plan B, with fees averaging approximately fifty per cent more than those of Plan A, has been made available to the public.

In-hospital medical care allowances are now available for 180 days of such care instead of twenty-one days originally provided by the contract. Emergency and intensive in-hospital medical care benefits have been added, and the fees for the first two days of regular and emergency in-hospital medical care have been increased. Allowances for consultation services and electric shock treatment of psychiatric cases are now provided by the contract.

Allowances for surgery have been improved through more than 200 changes in the Schedule of Payments. These improvements include increases in allowances for over 140 surgical items, the addition of approximately sixty new items to the schedule, and many changes in the wording of the schedule based upon changes and improvements in the practice of medicine.

The Plan A obstetrical allowance has been increased from $50 to $60. The waiting period for eligibility for obstetrical care allowances also has been reduced from ten to nine months.

Blue Shield coverage has been further broadened by the additions of allowances for x-ray therapy and radioactive isotope services.

Altogether, more than 250 additions and improvements have been made in the fee schedule which originally had approximately 1,000 items. The majority of these changes have resulted from the suggestions and recommendations of representatives of different specialty groups and other physicians. All of them demonstrate the Board of Directors' persistent desire to broaden and improve the coverage of the Blue Shield contract.

The rate of hospital admissions for Blue Cross subscribers continued its record breaking pace through the third quarter of 1958. As of September 31, cases paid averaged 507 per 1,000 contracts. During these first nine months hospitalization expense exceeded $25,000,000 covering 993,000 days of care provided to 162,306 subscribers. Admissions for medical care continued to show the greatest percentage of increase with an eight per cent rise in frequency of occurrence over the similar period for 1957.

In a recent study, it was found that in the area of medical care admissions, diseases of the respiratory system was the chief cause of hospitalization with digestive diseases ranking second, circulatory diseases third and diseases of the genito-urinary system fourth. The study also disclosed that hospital stays of four days or less represented 45 per cent of all medical cases, exclusive of admissions for accidental injuries or poisonings.

The following table indicates the pattern of duration of stay of short stay cases in the four major categories of diseases.

PATTERN OF SHORT STAY MEDICAL CARE CASES PAID

By Length of Stay

Length of Hospital Stay	Respiratory System Diseases	Digestive System Diseases	Circulatory System Diseases	Genito-Urinary System Diseases
One day	7.0%	12.0%	6.0%	13.0%
Two days	9.0%	20.0%	6.0%	18.0%
Three days	14.0%	16.0%	8.0%	14.0%
Four days	13.0%	11.0%	7.0%	10.0%

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Committee Action

GERMAN MEASLES DURING EARLY PREGNANCY

The minutes of the annual meeting of the Committee on Maternal Health of the Minnesota State Medical Association held on May 22, 1958, include the following statement:

"The use of immune gamma globulin in the prevention and treatment of German measles in pregnant women was discussed, and it was the consensus that it was of no proven value. Its use in acute hepatitis, however, was recommended."

To answer questions raised by physicians, the above brief statement needs clarification.

It is agreed that German measles during the first trimester does increase the possibility of certain congenital malformations. The figures quoted in the past have varied tremendously, but most will agree that the incidence is probably increased considerably, from the expected 2 per cent of all births to 9 to 12 per cent of those with this disease. This is a serious potential increase.

The effects of immune gamma globulin, however, have been extremely variable in effect, apparently depending on the status of the donors of the pooled adult plasma, the dose, time of treatment and other factors. Results have shown significant protection in some cases and none at all in others. The dose recommended is 20 ml. given as early as possible. This makes it rather expensive treatment. But it is the only treatment available at present and its recommendation depends on the experience of the particular physician concerned. If I were personally concerned, I would use it in spite of the variable results because there is nothing else available and I would want to feel that I had done everything possible for my own family. But since the benefits cannot be guaranteed, the committee pointed out the high cost—about $40.00.

The question was really concerned with the free distribution through the State Health Department. If gamma globulin were available at no cost, physicians would use it freely. To ask the patient to pay the cost was another matter. The patient should know the potential risks and the possible benefits of gamma globulin and make the decision. This apparently represents the thinking of the committee. We are able to obtain only a small supply for distribution, and it is therefore restricted for use in young children with measles and for infectious hepatitis where its effects are definite and effective. If it were available in sufficient quantity, we would make it available for pregnant women as we did in the past for a time. The best method of preventing the serious effects of rubella in the infant is the deliberate exposure of young girls, since one attack usually confers immunity. There is an excellent article on this subject in the July 3, 1958, issue of the *New England Journal of Medicine* by Krugman and Ward of New York.

A. B. Rosenfield, M.D.
Division of Special Services
Minnesota Department of Health

HOW TO PREVENT PROFESSIONAL LIABILITY

Mr. R. Crawford Morris, Cleveland attorney, wrote in *GP* (18:176, September, 1958) that *res ipsa loquitur* is legal doctrine that can take away a physician's hard earned money—fast.

The *GP* article resulted from a forum on the business problems affecting medical practice. Mr. Morris set forth his views on *res ipsa loquitur* at the forum jointly presented by The Wm. S. Merrell Company and the Medical Council of the Washington Metropolitan Area.

Mr. Morris, a member of the Cleveland law firm Arter, Hadden, Wykoff and Van Duzer, defined *res ipsa loquitur:* "Where you have a bad result or an accident that doesn't normally occur unless somebody goofed or was negligent; and where the instrument that caused that accident is in the exclusive control of the defendant accused; and where the plaintiff's conduct couldn't possibly enter in as a factor; then the law will presume, without proof of anything, that the defendent did goof, that he was negligent."

The point is this—the law will shift the burden away from the patient onto the doctor defendant to prove that he was not negligent. *GP* will publish the complete series of ten reports discussed at the unique medico-economic forum.

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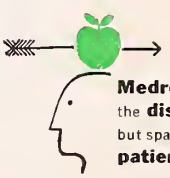
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Meetings and Announcements

NATIONAL

AMERICAN MEDICAL ASSOCIATION, 12th clinical meeting Minneapolis, December 2-5, 1958

American College of Surgeons sectional meetings:

Charleston, South Carolina, January 19, 20, 21, 1959

Houston, Texas, February 2, 3, 4, 1959

Vancouver, British Columbia, February 26, 27, 28, 1959

St. Louis, Missouri (four-day meeting; joint Nurses' Sessions), March 9-12, 1959

Montreal, Quebec (four-day meeting; joint Nurses' Sessions), April 6-9, 1959

American College of Allergists Graduate Instructional Course and Annual Congress, March 15-20, 1959, Mark Hopkins Hotel, San Francisco, California. Contact: John D. Gillaspie, M.D., Treasurer, 2049 Broadway, Boulder, Colorado."

Chicago Postgraduate Course in Arthritis and Related Conditions, February 19, 20 and 21, 1959, Thorne Hall, Northwestern University, Lake Shore Drive at Superior Street, Chicago, Illinois. Tuition $50. Frank R. Schmid, M.D., 303 East Chicago Avenue, Chicago 11, Illinois, secretary.

Mediclinics, fourth annual refresher course of postgraduate medical education, Fort Lauderdale, Florida, March 2-12, 1959. (Acceptable for 32 hours of postgraduate study—Category I credit for American Academy of General Practice members).

INTERNATIONAL

International College of Surgeons, southeastern regional meeting, Miami Beach, January 4-7, 1959. For information, write to Harold O. Hallstrand, M.D., 7210 Red Road, South Miami, Fla., chairman.

AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

The American College of Obstetricians and Gynecologists has announced the following future meeting plans:

1959—Atlantic City, New Jersey—April 5-9
Headquarters—Traymore Hotel
All activities except breakfast conferences and banquet in Convention Hall.

1960—Chicago, Illinois—April 24-27
Headquarters—Morrison Hotel
All activities in hotel

1961—Boston, Massachusetts—April 16-21
(If no convention hall is available, this meeting will be transferred to The Americana, Bal Harbour, Miami Beach, Florida)

OPHTHALMOLOGICAL SOCIETY CONFERENCE

The Chicago Ophthalmological Society will hold its Annual Clinical Conference on February 13 and 14, 1959, at the Drake Hotel in Chicago, Illinois.

The subjects will include a symposium on the management of surgical conditions of lids and lacrimal apparatus, management of uveitis, prophylaxis and treatment of vascular occlusions, plastic surgical principles, clinical value of electro-retinography, management of cardiac arrest and glaucoma management, and present status of preserved eye tissue for transplantation.

Registration fee for the entire course including round table luncheons and buffet supper is $45.00 and may be payable to the Registrar: Mrs. Edward J. Ryan, 1150 North Lorel Avenue, Chicago 51, Illinois.

The Fifteenth Annual Sanford R. Gifford Memorial Lecture will be delivered by Dr. Paul A. Chandler of Boston, Massachusetts, on Friday, February 13, 1959, at the Drake Hotel at 5:15 P.M. All ophthalmologists are invited to attend the Gifford Memorial Lecture and the buffet supper which follows.

POSTGRADUATE COURSE ON DISEASES OF THE CHEST

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the Fourth Annual Postgraduate Course on Diseases of the Chest at the Sir Francis Drake Hotel, San Francisco, California, February 16-20, 1959.

The most recent advances in the diagnosis and treatment of heart and lung diseases, medical and surgical aspects, will be presented.

Tuition for this five-day course will be $100, including luncheon meetings.

Further information may be obtained by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Ill.

CONTINUATION COURSES

Medical continuation courses to be presented at the Center for Continuation Study, University of Minnesota, are as follows:

January 5- 7	Otolaryngology for General Physicians
January 15-17	Newer Drugs in General Practice
January 22-24	Surgery for Surgeons
February 23-25	Cardiovascular Diseases for General Practice

For further information concerning the above courses, write to the Director, Department of Continuation Medical Education, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14, Minnesota.

MINNESOTA PUBLIC HEALTH CONFERENCE

The Minnesota Public Health Conference, at its twelfth annual meeting at the St. Paul Hotel, September 18 and 19, re-elected Robert D. Ragsdale, executive secretary of the Hennepin County Tuberculosis Associa-

(Continued on Page A-53)

MINNESOTA PUBLIC HEALTH CONFERENCE

(Continued from Page A-50)

tion, as its 1959 president. Others elected were: Dr. Robert K. Anderson, St. Paul, first vice president; Mrs. Mildred Benson, St. Paul, second vice president; and Dr. Stewart C. Thomson, Minneapolis, treasurer. Dr. John Smiley, Dr. Henry Bauer, and Richard Bond, Minneapolis, and Richard Sha, Rochester, were elected to membership on the Conference Executive Committee. The organization will hold its 1959 annual meeting September 24-25 at the Radisson Hotel in Minneapolis.

Recipient of an honorary membership in the Minnesota Public Health Conference for "outstanding and meritorious achievement in public health in Minnesota" was Dr. Adolph G. Liedloff, retired Mankato physician and health officer. The presentation was made at the Conference's annual Albert J. Chesley, M.D., Memorial Banquet, held September 19. Making the presentation was Dr. A. B. Rosenfield of the Minnesota Department of Health.

Dr. Liedloff retired as part-time district health officer of District II at Mankato, in February, 1956, after nearly fifty years of service in public health. He was a charter member of the Minnesota Sanitary Conference which was organized in 1907. He served one term as president of the Sanitary Conference which later became the Minnesota Public Health Conference, as affiliate of the American Public Health Association.

Dr. Liedloff served as Blue Earth County health officer from 1932 until his appointment as District II health officer on a part-time basis on May 1, 1944. His appointment to the district office was repeatedly extended beyond the normal retirement age at the request of the late Dr. A. J. Chesley and other health department officials. In one such request, Dr. Chesley stated, "He is doing a splendid piece of work for us."

AMEF IN MINNEAPOLIS GETS NATIONAL ATTENTION

In Minnesota, as in other states, Fall is traditional as the time for AMEF campaigns. Just as traditional in the past few years has been Minnesota's rank near the top of successful states. This year, in an attempt to improve that success, the Hennepin County Medical Society (Minneapolis) has embarked on an experimental program.

The problems of AMEF campaigns in large cities are many, but basically they all stem from the difficulty of complete coverage. In an effort to sidestep this problem, the Minneapolis program, under the guidance of Dr. Harold G. Benjamin, AMEF Chairman, will utilize departmental meetings in the city's thirteen hospitals for solicitations of physicians.

Chiefs of staff have been enlisted on Dr. Benjamin's committee, and they in turn have secured the assistance of their various department heads. During the month of November, five minutes at the start of each staff meeting in the hospital will be devoted to a short discussion of AMEF and subsequent distribution of donation cards. For further ease of giving special blank checks have been attached to each card. A series of letters and





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pamphlets have been mailed to the Chiefs of Staff and their department heads outlining individual steps in the campaign. Shortly before the first of the month a general mailing went to all Minneapolis physicians. Finally each doctor will be in attendance at one or more meetings during which the AMEF program will be outlined.

The enthusiastic committee chairman, Dr. Benjamin, says of the plan, "It provides the element of direct approach so difficult to achieve. It affords a physician the opportunity of actually joining with others in making his gift, and best of all, it burdens no one—just five minutes of time by the department head." If the plan proves successful, AMEF plans to suggest its use elsewhere.

(The preceding account of the "Minneapolis Experiment" appeared in "The Foundation," AMEF Newspage.)

Minnesota AMEF Goal Set

Minnesota goal for the current AMEF campaign is $64,926 or $30 (thirty dollars) per active member. This goal was set by county society AMEF chairmen at their annual meeting held in September.

In 1957, 66.7 per cent of the Minnesota State Medical Association membership participated, with contributions totalling $28,684.70. Blue Earth, Freeborn, Nicollet, and Le Sueur Counties have already reported 100 per cent physician participation.

Members are encouraged to help county AMEF chairmen complete solicitations by December 25.



MINNESOTA STATE MEDICAL ASSOCIATION BROADCASTS BLANKET THE STATE

The current health information broadcast series, "Doctor, Tell Me," sponsored by the Minnesota State Medical Association began its thirty-nine-week schedule during the week of October 19. Approximately twenty-five radio stations throughout the state are now participating in the project. The program again features the presentation of health topics in an informal but informative manner by Dr. James Rogers Fox of Minneapolis. Assisting Dr. Fox are Miss Audrey June Booth and Jerry Ball of the KUOM staff. Format of the series will include "Medical Facts and Fallacies" treatment, letters from the mailbag, and question and answer sessions.

"Doctor's House Call" is the new five-minute health program featuring Dr. Fox, heard Monday through Friday at 6:10 P.M. on WCCO radio. Dr. Fox is also heard each Sunday morning at 8:00 A.M. on WCCO radio. Name of the show, "Your Health."

MSMS RADIO PROGRAMS
1958-59 Season

"Doctor, Tell Me"

Albert Lea.....KATE, Monday, 7:00 P.M.
Alexandria.....KXRA, Monday, 6:30 P.M.
Brainerd.....KLIZ, Sunday, 10:15 A.M.
Crookston.....KROX, Saturday, 10:15 A.M.
Detroit Lakes.....KDLM, Saturday, 10:00 A.M.
Duluth.....KDAL, Sunday, 9:05 P.M.
Ely.....WELY (to be announced)
Eveleth.....WEVE, Sunday, 1:45 P.M.
Fairmont.....KSUM, Friday, 7:35 P.M.
Faribault.....KDHL, Monday, 7:05 P.M.
Grand Rapids.....KOZY (to be announced)
Mankato.....KYSM, Saturday, 5:30 P.M.
Marshall.....KMHL, Sunday, 5:30 P.M.
New Ulm.....KNUJ, Saturday, 8:45 A.M.
Pine City.....WCMP, Sunday, 12:30 P.M.
Pipestone.....KLOH (to be announced)
Redwood Falls.....KLGR, Sunday, 5:30 P.M.
St. Cloud.....KFAM, Saturday, 11:30 A.M.
Thief River Falls.....KTRF (to be announced)
Twin Cities.....KUOM, Monday, 11:15 A.M.
Wadena.....KWAD, Sunday, 1:45 P.M.
Willmar.....KWLM, Sunday, 5:30 P.M.
Winona.....KWNO, Sunday, 9:15 P.M.
Worthington.....KWOA (to be announced)

"Your Health"—WCCO, Minneapolis-St. Paul, Sunday, 8:00 A.M.

"Doctor's House Call"—WCCO, Minneapolis-Saint Paul, Monday through Friday, 6:10 P.M.



nasal and paranasal congestion and control secondary invaders

Now, a single unique preparation, Trisulfaminic, can provide dramatic relief from congestion, and at the same time protect the patient from secondary bacterial invaders. Often within minutes of the first dose, congestion begins to clear; the patient can breathe again.

Trisulfaminic is particularly valuable for the "almost well" patient who is recovering from influenza but is left with congested nasal and bronchial passages. And for patients with purulent rhinitis, sinusitis or tonsillitis, combination therapy with Trisulfaminic offers a most realistic approach to total treatment.

Oral Decongestant Action. Through the action of Triaminic, nasal patency is achieved rapidly and dramatically. Adequate ventilation helps eliminate mucus-harbored pathogens. And because Trisulfaminic is administered *orally,* there is no problem of rebound congestion, no pathological change wrought in the nasal mucosa.

Wide-Spectrum Action. Secondary bacterial infections, which are always a threat in upper respiratory involvement, are forestalled by the wide-spectrum effectiveness of triple sulfonamides. This added antibacterial protection makes Trisulfaminic highly useful in treating the debilitated patient who is prone to lingering or frequently recurring colds.

Trisulfaminic *tablets and suspension*

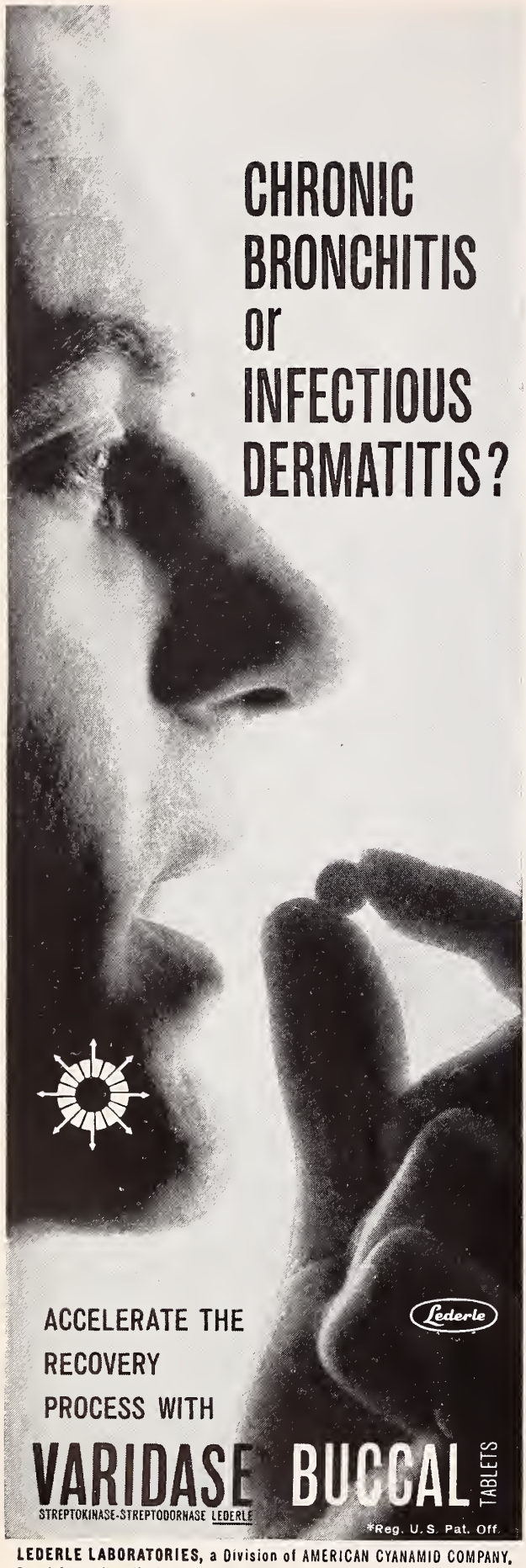
TRIAMINIC PLUS TRIPLE SULFAS

Each Tablet and each 5 ml. teaspoonful of Suspension contains:

Triaminic®	25 mg.
(phenylpropanolamine HCl	12.5 mg.;
pheniramine maleate	6.25 mg.;
pyrilamine maleate	6.25 mg.)
Trisulfapyrimidines U.S.P.	0.5 Gm.

Dosage: Adults—2 to 4 tablets or teaspoonfuls initially, followed by 2 tablets or teaspoonfuls every 4 to 6 hours until the patient has been afebrile for 3 days. Children 8 to 12 years—2 tablets or teaspoonfuls initially, followed by 1 tablet or teaspoonful every 6 hours. Younger children—dosage in proportion.

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Woman's Auxiliary

SECRETARY OF STATE COMPLIMENTS MINNESOTA AUXILIARY MEMBERS

Secretary of State State John Foster Dulles, in a recent letter to Mrs. Reuben F. Erickson, State Auxiliary President, extended his personal appreciation for the excellent manner in which the wives of Minnesota's Men of Medicine helped to make the visit of World Health Organization delegates and their wives attending the June meeting more pleasant.

The comments of Mr. Dulles were as follows:

Dear Mrs. Erickson—Ever since the World Health assembly last June, I have heard how successful it was and what a deep impression Minnesota and Minneapolis made on the delegates. Most recently I have been again reminded of it by some comments I received at the United Nations. I would like to express my appreciation for your contribution to the success of the meeting at Minneapolis.

In particular, I want to thank you for the time and effort you and your associates expended in arranging interesting activities for the delegates and their wives. For many of the group it was their first visit to this country and they left with warm remembrances of the friendship and hospitality they received from the people of Minnesota.

I am grateful to you and those who worked with you for your help in furthering international understanding and good will.

JOTTINGS FROM THE RECENT JOURNEYING OF THE STATE PRESIDENT

October 27.—Attended meeting of the Mower County Auxiliary in Austin with luncheon at the Kingswood Hotel.

October 29.—Participated in a luncheon meeting of the Wabasha County Medical Society held at the Terrace in Lake City. I was accompanied by Mrs. Raymond Scherer, legislative chairman. Mrs. Scherer presented a brief résumé of pending legislation to members of the group.

November 4.—Attended an area auxiliary meeting at Hart's Cafe in Montevideo. Mrs. M. I. Hauge, Clarkfield is the area chairman. The same day I attended an evening dinner meeting of the West Central Minnesota Auxiliary at the Country Club in Morris.

November 10.—Attended a luncheon meeting at the home of Mrs. John Stuhr in Stillwater.

MRS. REUBEN ERICKSON

HENNEPIN COUNTY AUXILIARY HOLDS OPENING MEETING

The first general meeting of the Women's Auxiliary to the Hennepin County Medical Society was held at the Minneapolis Institute of Arts, November 7, 1958. A very informative and entertaining talk by Mr. Boris Sokoloff, general manager of the Minneapolis Symphony Orchestra gave the women some insight as to what



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transpires behind the scenes prior to a scheduled performance. Mr. Sokoloff pointed out that the Minneapolis Symphony is the oldest symphony orchestra west of the Mississippi, having been organized in 1903. It is sustained entirely by the support of its patrons.

SCOTT-CARVER COUNTY AUXILIARY ACTIVITIES

Members of the Scott-Carver County Medical Auxiliary and their husbands were taken on a tour of the new Community Hospital at Watertown on Thursday, October 16, 1958. Following the tour, a dinner was served at the local high school by the members of one of the Hospital Guild circles. Another project of the Scott-Carver group has included providing assistance for a group of retarded children housed in one of the buildings located on the grounds of the Women's Reformatory at Shakopee.

COLOR

Color plays a far more important role in our lives than most of us realize. Spirits rise when the sky is blue and the sun is shining, and droop when the day begins with grey overcast. Experts . . . have discovered that red walls will raise the blood pressure of those suffering from low blood pressure, and will cause outbreaks of fighting among emotionally unstable patients. Blue has a cooling and relaxing effect. Soft greens without too much yellow sooth and yet refresh a person who is ill. A warm yellow, almost amber, helps the mentally ill. —*The Antiseptic,* August, 1958.

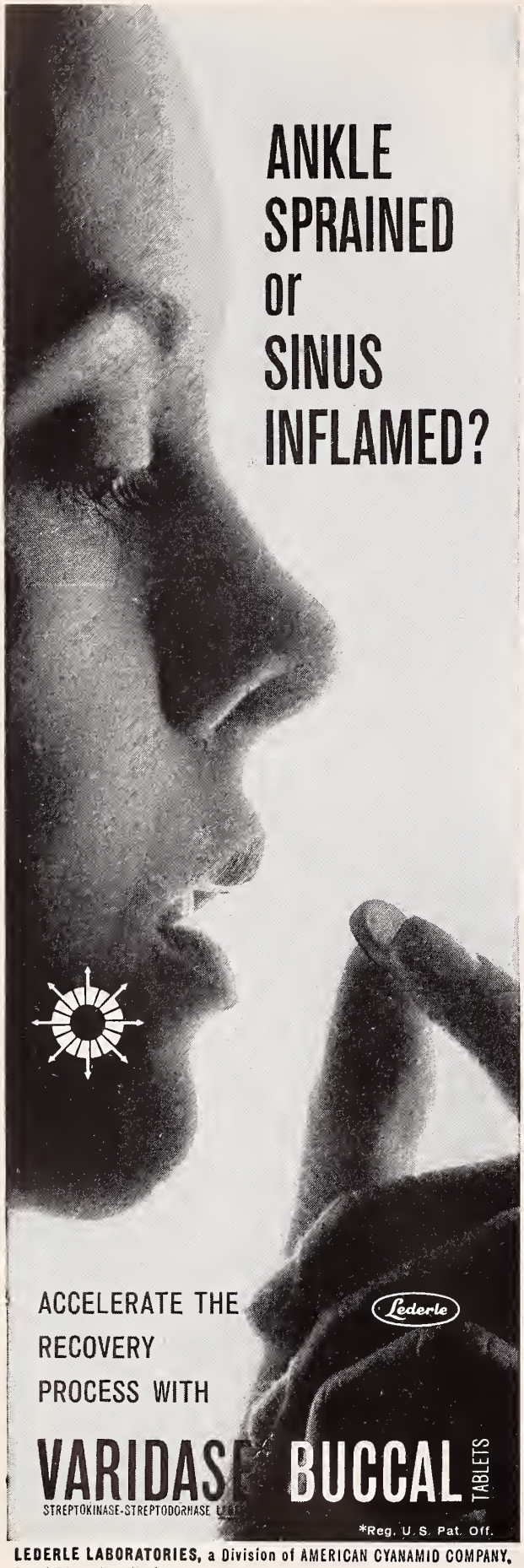
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In Memoriam

JOHN ALBERT SCHULTZ

Dr. John Albert Schultz, retired physician and surgeon from Albert Lea, died October 31, 1958. He was eighty-one years old at the time of his death.

Dr. Schultz, a native of Rochester, Minnesota, completed his secondary schooling at Sleepy Eye High School. He was a graduate of Rush Medical College. From 1903 until 1906, he practiced medicine at Lenox, South Dakota, from 1906-1917, he practiced at Dundee, and from 1917 until 1921, when he came to Albert Lea, he practiced in Emmons.

In Albert Lea, he was a member of the surgical and medical clinic and a staff member of Naeve Hospital. He was elected president of the Freeborn County Medical Society in 1938. He also belonged to the Minnesota State Medical Association and the American Medical Association.

He was a Master Mason, a past high priest of the Royal Arch Masons Chapter, a Knights Templar, a member of Osman Shrine and belonged to the Scottish Rite Consistory at Winona.

He is survived by his wife; a sister, Mrs. Dolly McDonald, and a brother, District Judge W. A. Schultz, both of South Saint Paul. Also surviving is a nephew, Everett Donnell, Minneapolis, and a niece, Joanna Strobel, Moscow, Idaho.

CARL G. WINGQUIST

Dr. Carl G. Wingquist, physician on the Cuyuna Range for the past twenty years, died November 4, 1958, at Miners Hospital in Crosby. He was fifty-three years old.

Dr. Wingquist was born near Stockholm, Sweden, on April 5, 1905. He came to this country with his parents and lived in Wisconsin and later near Anoka. The doctor graduated from the University of Minnesota School of Medicine. He took his internship at St. Mary's Hospital in Duluth.

Dr. Wingquist spent four years in practice at Carlton and a year in California. In 1938, he came to the Cuyuna Range and established a practice in the Pitt Building in Crosby. In 1941, he entered the Army, serving for five and one-half years. He was chief of surgery for a 600-bed evacuation hospital in Europe, serving with the Fourth Armored Division.

Following his medical discharge, Dr. Wingquist returned to his practice in the range area. Five years ago, he joined Dr. A. R. Anderson in the construction of the Crosby Clinic.

Dr. Wingquist was a member of the Myrin-James American Legion Post of Ironton, the Minneapolis Athletic Club. He was also a member of the American Medical Association, Upper Mississippi Medical Society and Minnesota State Medical Association.

Survivors include his wife, Mae; daughter, Carole, a nurse in a Minneapolis hospital; a son, Carl, Jr., a student at the University of Minnesota; and his father, Gustav, in Chicago, Illinois.

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General Interest

Dr. **J. Arnold Bargen,** of the Mayo Clinic staff, was a member of a panel discussing functional disturbances of the gastrointestinal tract at the final session of the American College of Gastroenterology held in New Orleans, Louisiana.

* * *

The Southwestern Minnesota Medical Society's annual meeting, November 3, at the Pipestone Country Club, had as its guest speaker, **Dr. B. J. Spencer,** of Minneapolis. **Dr. F. W. Bofenkamp** of Luverne was elected president; **Dr. Hugh Patterson** of Slayton, president-elect; **Dr. Bernard Karleen** of Jackson, vice president; **Dr. O. M. Heiberg** of Worthington, secretary. **Dr. E. W. Arnold** of Adrian and **Dr. B. M. Stevenson** of Fulda were named censors. **Dr. R. J. Kotval** was elected censor to fill the unexpired term of **Dr. C. A. Williams** of Pipestone who has retired from practice. Chosen delegates to the Minnesota State Medical Association convention in 1959 were **Dr. John Lohman** and **Dr. O. M. Heiberg.**

* * *

Dr. Don R. Mathieson, head of the Section of Clinical Pathology in the Mayo Clinic and Assistant Professor of Pathology in the Mayo Foundation, reported for active duty at the first annual Research Reserve Seminar on Submarine and Diving Medicine at the U. S. Naval Submarine Base at New London, Connecticut, October 24. Dr. Mathieson, who holds the rank of commander in the U. S. Naval reserve, spent fourteen days in active training in submarine medicine at the base and one of the days he spent aboard an operating submarine.

* * *

Dr. Gerald M. Needham, Mayo Clinic bacteriologist, has been elected president of the Rochester Methodist Hospital succeeding T. H. Johansen. Election came at the sixth annual meeting of the hospital's thirty-two-member board of directors, held in the Kahler Hotel.

* * *

Dr. C. A. Good has been named by the Mayo Clinic Board of Governors to succeed the late **Dr. Harry M. Weber** as head of the Clinic Section of diagnostic roentgenology.

* * *

Guest speaker at a recent Monday night meeting of the Sertoma Club was **Dr. V. A. Vix** of the Worthington Clinic. After a short introductory talk, he presented an official American Heart Association film on cardiac experimentation carried on by that group.

* * *

Another physician has joined the Medical Arts Clinic in Albert Lea. He is **Dr. Arlo R. Blumer,** a native of Beresford, S. D. He will practice with Drs. **Theodore M. Hanse, John P. Person,** and **Sidney A. Whitson.** He interned at the Veterans Administration Hospital in Long Beach, California, and spent a year in general practice in Alhambra, California, before entering service. Dr. Blumer went into the Army Medical Corps in 1956 and spent two years in Asmara, Eritrea, Ethiopia, the second year as commander of the hospital there. He was returned to inactive status in 1958.

* * *

Dr. Bruce E. Douglass, of the Mayo Clinic staff, recently reported on caprices in symptoms and growth of lung cancers for Missouri family physicians at their annual session in St. Louis.

* * *

Dr. Charles W. Mayo, Rochester, received an honorary degree of doctor of humanities from Nasson College where he addressed an academic convocation recently.

* * *

New president of the Minnesota Academy of General Practice is **Dr. John G. Lohmann,** Pipestone. Dr. Lohmann succeeded **Dr. Robert O. Quello,** Minneapolis, to that office at the recent fall meeting of the group held in Rochester. **Dr. Cy Tift,** St. Paul, was named president-elect; **Dr. H. L. Huffiington,** Waterville, vice president, and **Dr. Paul Linner,** St. Paul, secretary-treasurer. **Dr. Duanne Olson,** Gaylord, was named speaker of the house of delegates and **Dr. William Watson,** St. Paul, vice speaker. Named delegates to the national house of delegates meeting in San Francisco, California, next April were **Dr. Herman Drill,** Hopkins, and **Dr. James A. Cosgriff, Jr.,** Olivia.

* * *

Dr. B. J. Kennedy, Associate Professor, Department of Medicine, was a guest lecturer at the eleventh annual scientific meeting of the Detroit Institute of Cancer Research on October 29. He spoke on "The Physiological Responses during Hormone Therapy of Breast Cancer."

* * *

On October 20, 1958, **Dr. Robert E. Priest** addressed the Minneapolis Chapter of the American Academy of General Practice on the subject, "Disorders of the Ear as Related to General Practice."

* * *

Dr. Thomas B. Magath, head of the Section of Clinical Pathology of the Mayo Clinic from 1946 to 1958, and professor of pathology in the Mayo Foundation, was honored on November 4 in Chicago at a dinner meeting of the American Society of Clinical Pathologists and the College of American Pathologists. Dr. Magath received the Ward Burdick Award of the American Society of Clinical Pathologists. The award is described as "a gold medal which shall be presented to that Fellow who, in the opinion of the Research Committee, has presented the most meritorious contributions to the science of clinical pathology."

* * *

Dr. Frank Krusen, senior consultant of the department of physical medicine and rehabilitation at the Mayo Clinic, Rochester, was the speaker at the tenth annual anniversary luncheon meeting of the St. Paul Rehabilitation Center held at the University Club. Dr.

(Continued on Page A-62)

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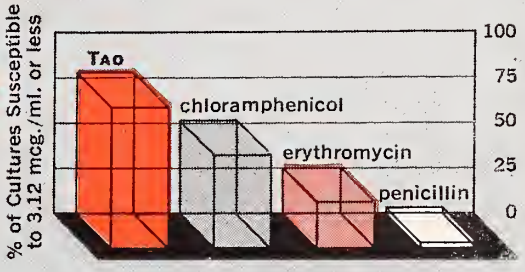
effective . . .

CLINICAL RESULTS	adults	children	all Staph infections
Cured	172 (80%)	148 (89%)	71 (88%)
Improved	28 (13%)	8 (5%)	7 (9%)
Failure	17 (7%)	11 (6%)	3 (3%)

Types of infecting organisms: The majority of identified etiologic microorganisms were Staph. aureus and Staph. albus. Tao has its greatest usefulness against organisms such as: staphylococci (including strains resistant to other antibiotics), streptococci (beta-hemolytic strains, alpha-hemolytic strains and enterococci), pneumococci, gonococci, Hemophilus influenzae.

even against resistant staph[1,2] . . .

Per cent of "antibiotic-resistant" epidemic staphylococci cultures susceptible to Tao, erythromycin, penicillin and chloramphenicol.[1]



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REACTIONS:

(a) adults	(b) children
Total—9.2% (20 out of 217)	Total—0.6% (1 out of 167)
Skin rash—1.4% (3 out of 217)	Skin rash—none
Gastrointestinal—7.8% (17 out of 217)	Gastrointestinal—0.6% (1 out of 167)

There was complete freedom from adverse reactions in 94.5% of all patients. Side effects in the other 5.5% were usually mild and seldom required discontinuance of therapy.

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Dosage and Administration: Dosage varies according to the severity of the infection. For adults, the average dose is 250 mg. q.i.d.; to 500 mg. q.i.d. in more severe infections. For children 8 months to 8 years of age, a daily dose of approximately 30 mg./Kg. body weight in divided doses has been found effective. Since Tao is therapeutically stable in gastric acid, it may be administered at any time, without regard to meals.

Supplied: Tao Capsules—250 mg. and 125 mg.; bottles of 60. Tao for Oral Suspension—1.5 Gm.; 125 mg. per teaspoonful (5 cc.) when reconstituted; unusually palatable cherry flavor; 2 oz. bottle.

References: 1. English, A. R., and Fink, F. C.: Antibiotics & Chemother. (Aug.) 1958. 2. English, A. R., and McBride, T. J.: Antibiotics & Chemother. (Aug.) 1958. 3. Wennersten, J. R.: Antibiotic Med. & Clin. Therapy (Aug.) 1958. 4. Celmer, W. D., et al.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 476.

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(Continued from Page A-60)

Krusen spoke on "The Future of Rehabilitation in St. Paul." The center, located in the Wilder Foundation building, is sponsored by the Foundation and the Minnesota Society of Crippled Children and Adults.

* * *

Dr. M. T. Summar, Eveleth, member of the East Range Clinic staff, has been informed he has been certified as a Diplomate of the American Board of Otolaryngology. Dr. Summar has been associated with the East Range Clinic since August, 1957. Prior to this time, Dr. Summar was a resident in ear, nose, and throat surgery at Charity Hospital, New Orleans. In January, 1959, Dr. Summar will become a full partner in the East Range Clinic.

* * *

Elected president of the Minnesota American Legion Hospital Association during its annual trustees' meeting was **Dr. George W. Snyder,** of St. Paul.

* * *

Succeeding **Dr. Karl W. Anderson** as nursing services chairman for the Minneapolis-Hennepin County Red Cross chapter, is **Dr. Earl T. Opstad,** assistant medical director of Northwestern Life Insurance Company. Dr. Anderson will continue on the Red Cross nursing committee as vice chairman.

* * *

Dr. Olaf Lukk, Montgomery, has been elected chief of staff of the Community Memorial Hospital, New Prague. He succeeds **Dr. E. J. Nelson,** Lonsdale. **Dr. E. R. Rynda,** New Prague, was elected vice chief of staff. **Dr. Elizabeth K. Rieschl,** Jordan, was re-elected for her seventh term as secretary-treasurer.

* * *

Dr. H. J. Brekke, medical director for Lutheran Brotherhood, has been elected president of the medical section of the National Fraternal Congress. The congress is made up of fraternal life insurance organizations. The election took place during the congress convention at Miami Beach, Florida.

* * *

A St. Paul internist and specialist in heart conditions, **Dr. A. MacDonell Richards,** recently presented a lecture, entitled "Heart Diseases," at a meeting of the American Heart Association held in San Francisco.

* * *

Dr. Norman C. Hill, who has completed a fellowship in neurologic surgery at the Mayo Foundation, Rochester, has been awarded the American Academy of Neurological Surgery prize of $100.00 and other considerations for his work, "Cerebrospinal-Fluid Proteins, Glycoproteins, and Lipoproteins in Obstructive Lesions of the Central Nervous System," written with **Drs. N. P. Goldstein, W. F. McGuckin, H. J. Svein,** and **Mr. B. F. McKenzie,** of the Mayo Clinic and Mayo Foundation. The prize is given for the best paper on original clinical and laboratory investigations relating to the nervous system by doctors of medicine in training in neurologic surgery.

* * *

Dr. George B. Ewens, of the East Range Clinic, Virginia, has been certified as a diplomate of the

American Board of Dermatology. Dr. Ewen has been associated with the East Range Clinic since August, 1957. Prior to that time, he was a resident in dermatology at the University of Minnesota and Ancker Hospital in St. Paul.

* * *

Coroner-elect of Dakota County is **Dr. Roger W. Marks,** West St. Paul.

* * *

"Lesions of the Lower Bowel" is the title of a 347-page book containing seventy-five illustrations in color, written by Dr. **Raymond J. Jackman,** head of the Section of Proctology of the Mayo Clinic and associate professor of proctology in the Mayo Foundation, Graduate School, University of Minnesota. The book, which has just been issued by Charles C Thomas, medical publisher, Springfield, Illinois, is written from the standpoint of the needs of the clinician in medicine according to Dr. Jackman.

* * *

Dr. Arthur T. Hertig, Shattuck professor of pathologic anatomy in the Harvard Medical School, gave a lecture on "Hormonally Active Ovarian Tumors" at the Mayo Foundation, Rochester, Minnesota, October 23, 1958.

* * *

Dr. Cuthbert E. Dukes, director of the research laboratory of Saint Mark's Hospital in London, England, gave a lecture on "Cancer Control in Familial Polyposis of the Colon" at the Mayo Foundation, Rochester, Minnesota, on October 24, 1958.

* * *

Dr. Wm. M. Stromme, Minneapolis, was a guest speaker at the meeting of the Wisconsin Society of Obstetrics and Gynecology on October 25, 1958, presenting a paper, "Conservative Surgery for Ectopic Pregnancy."

* * *

Dr. Fred B. Wilson, St. Paul, spoke before the McLeod County Medical Society in Hutchinson on Thursday, November 20, 1958. His subject was "Special Methods in Neurological Diagnosis."

* * *

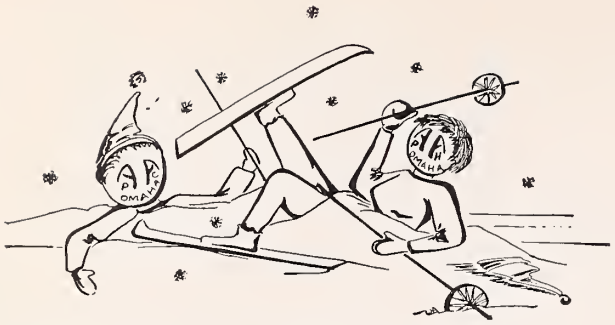
Dr. Gordon R. Kamman, St. Paul, and Mr. Charles Murnane, St. Paul attorney, addressed a joint meeting of the Mesabi Range Medical and Bar Associations at Hibbing, on Monday evening, November 10. Their subject was "Medico-Legal Relationships."

Dr. Kamman and Mr. Murnane also spoke before the Stearns-Benton Medical and Bar Associations on the same subject on November 20, in St. Cloud.

* * *

Dr. John D. Krafchuk has just returned to Minnesota and has opened an office for the practice of dermatology in the Medical Arts Building, Minneapolis. He left Minnesota in 1954, on being called back to active military duty, to become Chief of Dermatology at the United States Naval Hospital at Mare Island, California. For the past three years, Dr. Krafchuk has been Assistant Professor of Medicine (Dermatology) at the Tulane University School of Medicine in New Orleans, the





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director of the skin histopathology laboratory at that institution. Last year he was elected President of the Louisiana Dermatological Society. A year ago he presented three papers on cutaneous wound healing and on fungus infections, at the 11th International Congress of Dermatology at Stockholm.

* * *

Dr. Frank H. Krusen, senior consultant and former head of the section of physical medicine and rehabilitation of the Mayo Clinic, has received a special citation from Governor Orville L. Freeman for meritorious service to the citizens of Minnesota and to the nation. The award was made at the dinner of the House of Delegates of the American Medical Association during its clinical session in Minneapolis this month. Earlier this year, the American Medical Association conferred upon Dr. Krusen its Distinguished Service Award.

* * *

LUVERNE PHYSICIAN IS GENERAL PRACTITIONER OF THE YEAR

Minnesota's 1958 General Practitioner of the Year is **Dr. Charles L. Sherman,** 82-year-old physician from Luverne, Minnesota. He is the recipient of this year's honor awarded annually by the Minnesota State Medical Association.

Dr. Sherman, a general practitioner for more than fifty-eight years, is still active in his practice. He has been a member of the State Board of Medical Examiners since 1927, having served frequently as its chairman.

He was also one of the original sponsors of the project to locate a tuberculosis sanatorium in Worthington. He was named the first president of that sanatorium board in 1914 and retained this office for forty-three years until the closing of the institution in 1957. During the life of the institution, the tuberculosis fatality rate in the eight-county area served by the sanatorium decreased from sixty-four deaths per year to the present no death rate.

In addition, he still serves as one of the original members of the corporate body of Minnesota Blue Shield.

As a civic leader in the Luverne community, Dr. Sherman organized the Rotary Club and served as its president. He is a past president of the Kiwanis and Commercial Clubs of Luverne. For more than fifty years, Dr. Sherman has been a Worshipful Master of Ben Franklin Masonic Lodge.

For many years, Dr. Sherman has taken an active interest in the medical needs of the community. During his more than half a century of practice in Luverne, he has served as City Health Officer, Rock County Health Officer, and Rock County Coroner.

He is a member of the Southwestern Minnesota Medical Society, and a former president of that organization; a member of the Minnesota State Medical Association, and the AMA; a member and past president of the Sioux Valley Medical Association and the Southern Minnesota Medical Association.

The name of Dr. Sherman was placed in nomination for the national practitioner award sponsored annually by the American Medical Association. Awards were made in conjunction with the recent American Medical Association Clinical meeting in Minneapolis.

MINNEAPOLIS PHARMACIST, IOWA PHYSICIAN AND NURSE SENTENCED IN ABORTION CASE

On September 22, 1958, Louis Dorfman, thirty-seven, 1336 Thomas Ave. N., Minneapolis, appeared before the Hon. Harry E. Narey, Judge of the 14th Judical District at Storm Lake, Iowa, and entered a plea of guilty to the crime of attempt to produce abortion. Judge Narey then sentenced the defendant Dorfman, who is a licensed Minneapolis pharmacist, to pay a fine of $500 and to serve a term of not to exceed five years in the Iowa State Penitentiary at Fort Madison, Iowa. The Court then immediately suspended the sentence, except that portion of the sentence providing for a fine, and placed Dorfman on probation for a period of one year on his good behavior.

The defendant Evelyn Daniels, who served as Dr. Swallum's nurse in Storm Lake, entered a plea of guilty before Judge Narey on September 27, 1958, to the crime of attempt to produce abortion at which time she was sentenced to a term of not to exceed five years in the Women's Reformatory at Rockwell City, Iowa, in addition to being fined the sum of $500. However, Judge Narey then also suspended the sentence for the defendant Daniels, except for the payment of the fine, and placed her on parole for a period of six months to Sheriff Harry Dreyer of Buena Vista County, Iowa.

Dr. James A. Swallum, eighty-five, 1318 W. 5th St., Storm Lake, Iowa, on September 27, 1958, also entered a plea of guilty in the case before Judge Narey. Inasmuch as Dr. Swallum had been placed on probation in 1955 by Judge Narey in a previous abortion case, Judge Narey sentenced the defendant to pay a fine of $500 and then continued his probation in the first case indefinitely. At the time of his plea of guilty Dr. Swallum permanently surrendered his medical license and agreed in writing to discontinue the operation of his hospital in Storm Lake and to dispose of the property. Mr. Richard W. Cooper, County Attorney of Buena Vista County, then filed with the Court an application to revoke the doctor's probation on his first conviction and Judge Narey continued the hearing on this application, in the event that it is found that Dr. Swallum does not comply with the present sentence of the Court. Dr. Swallum, who is a graduate in medicine of Hahnemann Medical College in Chicago in 1901, has practiced in Storm Lake for many years.

The proceedings in the present case were instituted after an investigation by a representative of the Minnesota State Board of Medical Examiners and detectives of the Minneapolis Police Department disclosed that a twenty-two-year-old unmarried St. Paul woman was hospitalized at a St. Paul hospital suffering from the effects of a criminal abortion. The patient gave a signed written statement in which she said she had paid $500 to the defendant Dorfman and he sent her to Dr. Swallum in Storm Lake, Iowa, to be aborted. Dorfman claimed in the statement taken from him that he mailed the $500 in cash to Dr. Swallum.

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Book Reviews

Books listed here become the property of the Ramsey. Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

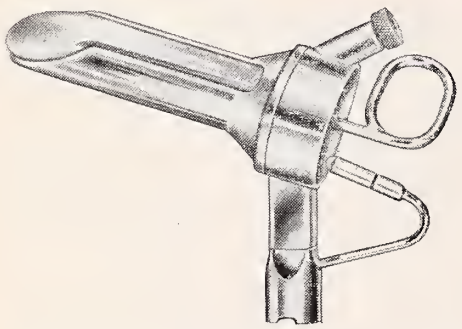
THE CARE OF THE GERIATRIC PATIENT. Edited by E. W. Cowdry, Ph.D., Sc.D. (Hon.) Director of Wernse Cancer Research Libratory, Washington University School of Medicine; formerly president of the Gerontological Society and of the Second International Gerontological Congress; chairman of the Medical and Scientific Committee, American Society for the Aged. 438 pages. Price $8.00, flexible binding. St. Louis: C. V. Mosby Co., 1958.

WHAT DO WE KNOW ABOUT HEART ATTACKS. John W. Gofman, M.D. Professor of Medical Physics, University of California, Berkeley. 180 pages. Price $3.50, cloth. New York: G. P. Putnam's Sons, 1958.

RADIOACTIVE ISOTOPES IN CLINICAL PRACTICE. Edith H. Quimby, Sc.D. Professor of Radiology (Physics), College of Physicians and Surgeons, Columbia University, New York; Sergei Feitelberg, M.D., Director, Physics Department, Mt. Sinai Hospital; Associate Clinical Professor of Radiology, College of Physicians and Surgeons, Columbia University; and Solomon Silver, M.D., Attending Physician, Chief, Thyroid Clinic, The Mt. Sinai Hospital; Associate Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York. 451 pages. Illus. Price $10.00, cloth. Philadelphia: Lea & Febiger, 1958.

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TUMORS AND TUMOROUS CONDITIONS OF THE BONES AND JOINTS. Henry L. Jaffe, M.D. Director of Laboratories and Pathologist, Hospital for Joint Diseases, New York; Consultant, Armed Forces Institute of Pathology, Washington, D.C. 629 pages. Illus. Price, $18.50, cloth. Philadelphia: Lea & Febiger, 1958.

CHEMISTRY FOR MEDICAL TECHNOLOGISTS. Charles E. Seiverd, Chief Technologist, Doctor's Clinical Laboratory; Director of Research, The Horizon Laboratories, Glendale, Arizona. 465 pages. Illus. Price, $10.75, cloth. St. Louis: C. V. Mosby Co., 1958.

TREATMENT OF BREAST TUMORS. Robert S. Pollack, M.D., F.A.C.S. Clinical Instructor in Surgery, Stanford University School of Medicine; Clinical Instructor in Surgery (Oncology) University of California School of Medicine; Assistant Chief of Surgery, Mt. Zion Hospital; San Francisco, California; Consulting Surgeon, Oakland Veterans Administration Hospital; Consulting Surgeon Oakland Naval Hospital, Oakland, California. 147 pages. Illus. Price $6.00, cloth. Philadelphia: Leo & Febiger, 1958.

AMID MASTERS OF TWENTIETH CENTURY MEDICINE. By Dr. Leonard G. Rowntree, Chief, Department of Medicine, Mayo Foundation (1922 to 1932). 684 pages. Price, $11.50. Springfield, Illinois: Charles C Thomas, 1958.

Three chapters of the work, which is an autobiography, deal with the author's experiences at the Mayo Clinic and Mayo Foundation during the period in which clinical investigation was begun at the Mayo Clinic.

Dr. Rowntree, born in London, Ontario, in 1883, studied medicine at the University of Western Ontario. From 1907 to 1916, he was a member of the faculty of the Johns Hopkins University Medical School. In 1916, he became head of the Department of Medicine in the University of Minnesota Medical School, and in 1920 Dr. William J. Mayo asked him to come to Rochester as head of a section of medicine in the Mayo Clinic. This post he assumed on April 1, 1920, and he was named head of the Department of Medicine of the Mayo Foundation on January 1, 1922.

Chapters 15, 16, 17 and 18 (eighty-four pages) of Dr. Rowntree's book, are devoted to the Mayo Clinic and Mayo Foundation. According to the author, the two Mayo brothers "have given the world priceless gifts." These are said to be:

1. A clinic that serves the needs daily of thousands of sick and crippled who turn to it for aid.
2. Group medicine, which is slowly but certainly coming more and more in vogue and infiltrating medical practice everywhere throughout the world.
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5. A family spirit of devotion to the sick that has persisted through three generations and endured through more than a century.

6. The Mayos sold surgery to the world. Surgery was not accepted willingly until they popularized it. Subsequently they sold it wholesale, so to speak, surgery became a salable commodity throughout the civilized world.

In addition to Dr. W. W. Mayo and Drs. C. H. Mayo, W. J. Mayo and C. W. Mayo, persons such as Mrs. Nora Guthrey, John H. Kahler, Drs. D. C. Balfour, E. Starr Judd, Henry S. Plummer, Christopher Graham, Fred W. Rankin, Waltman Walters, Norman M. Keith, Samuel Amberg, H. F. Helmholz, Sr., Walter C. Alvarez, Russell M. Wilder, Louis A. Buie, George B. Eusterman, F. A. Willius, J. A. Bargen, Walter M. Boothby, John S. Lundy, William C. MacCarty and many others are mentioned in Dr. Rowntree's account of his experiences in Rochester. Chapter 18 bears the title, "Clinic Chit Chat." The work of Dr. Edward C. Kendall and Dr. Philip S. Hench with cortisone is discussed in a chapter entitled "We Have Giants with Us in These Days."

Dr. Rowntree left Rochester in September, 1932, to become director of the Philadelphia Institute for Medical Research. Shortly after the end of World War II, he moved to Miami, Florida, where he now resides.

ELECTROCARDIOGRAPHY. By Michael Bernreiter, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Kansas Medical School. 134 pages. Illus. Price, $5.00. Philadelphia & Montreal: J. B. Lippincott Co., ©1958.

The book is a concise, factual treatise on fundamentals of electrocardiograms with only a minimum of theory to give a logical background to electrographic interpretation without wading through a mass of theory and physics. This is excellent, I believe, for the student, general practitioner, and a quick refresher for the internist. It is divided into eight chapters.

Chapter I is devoted to basic concepts of depolarization and repolarization and the electrophysiological principles of myocardial contraction, delving into the standard leads, unipolar leads, Einthoven triangle, and precordial leads.

Chapter II is a section on cardiac arrhythmias of sinus, auricular, nodal, and ventricular origin. It treats them simply, concisely, and most understandably. It omits ventricular tachycardia and fibrillation.

Chapter III is the section on heart blocks: first, second, and third degrees; bundle branch block; and Wolff-Parkinson-White Syndrome.

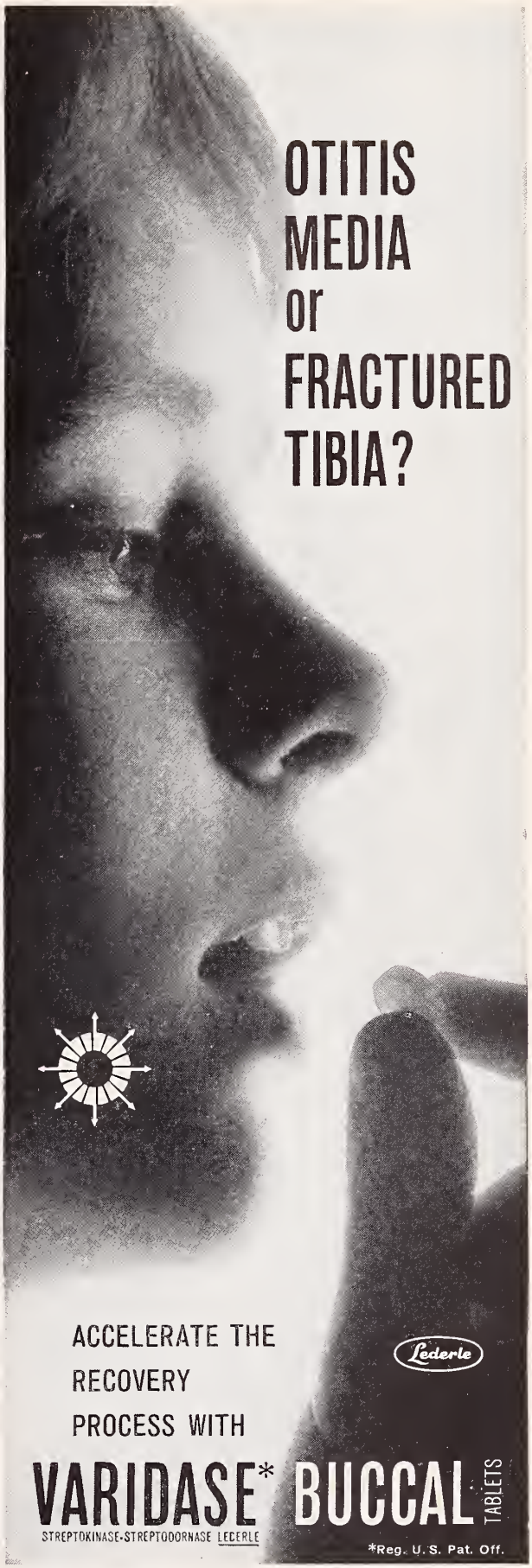
Chapter IV treats on hypertrophies right and left and includes a discussion of auricular hypertrophy.

Chapter V deals with ischemia, currents of injury and myocardial necrosis with many electrocardiographic tracings to illustrate the three basic points as apply to myocardial damage and infarction.

Chapter VI is the section on hyperpotassemia, potassium deficiency, calcium excess and calcium deficiency and many electrocardiographic tracings to bring out the main facts.

Chapters VII and VIII deal with effects of digitalis and quinidine on the electrocardiogram and the effects of these two drugs and electrolytes upon the QT interval.

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